THE BUILDER

A RECORD OF ARCHITECTURE AND CONSTRUCTION.

VOL. CVIII.—No. 3767. APRIL 16, 1915.

THE HOPE OF MODERN ARCHITECTURE.

ONE source of much of the delight felt in our mediæval architecture undoubtedly arises from the fact that it was produced by a number of designers, many of whom executed their own work, and each covered a limited and definite field, while in a number of our larger modern works the sense of effort is conveyed. If we analyse matters this arises from the way in which a conscientious architect has tried to design all the detail himself, suffering from a sense of weariness in the process which is mentally conveyed to those who see the result. The design of every portion of a great building involves an effort during the months or even years it may be under construction, and the fortunate architect who secures an important commission frequently secures with it a weight of responsibility and a continual claim on his powers of design which tend to undermine his critical judgment both in matters of detail and, what is more important, in mass. In many cases this feeling takes the form of an uneasy desire to consider alternative methods of treatment, for what has satisfied the designer originally frequently seems tame and commonplace on reconsideration, and, though he can correct his opinion by asking advice from his colleagues, such opinion seldom entirely satisfies. As mediæval buildings were produced, and in the earlier phases of the Renaissance, the architect evolved the general scheme, but detail must have been left principally to the executant, and the architect or chief designer was free from much of the unavoidable contact with many details which is now the lot of the modern architect.

It is clearly impossible to put back the hands of the clock, and it is doubtful whether, if we could do so, we should be altogether pleased with the results obtained; but we may secure one of the advantages of the old system, which undoubtedly was "collective" designing of buildings as opposed to their "individual" designing.

Such a result is obtained under the conditions under which many of the great architectural firms in America work. Such offices are more to be compared with trained schools of architectural design than with the larger architectural offices in this country. To begin with, the level of architectural education is higher, and promising assistants are in some cases sent over at the firm's expense to Paris to study in order to make themselves more useful to the firm at a later date. Then a really good assistant can secure what may be termed a "permanency," for many architects in the United States can afford to pay salaries for really good men which are more the salary of a junior partner than that of an ordinary assistant, and, having an assured number of trained and competent designers, the work produced, though often immense in actual quantity, is so thoroughly considered that there is less "rush" over its actual consideration and detailing than is frequently the case with us. And the head men of the office are the bearers of a tradition, and can be trusted to do a great mass of the actual designing, from which the principals are relieved. What is remarkable about the best contemporary work of America is restfulness and spaciousness, and the manner in which the note of individuality, which is so frequently insistent with us, is suppressed or subordinated.

The merits of collective designing are very real and manifest, and the American practice is more on the line of old historical tradition than modern English practice. The big American firms have their steelwork constructors, and so, in their own name, are fully competent to deal with the most intricate problems of modern construction, and art and science go literally hand in hand.

The stupendous developments of American towns, the immense size of the buildings erected and their cost have obscured the fact that the best of them are produced under conditions which are more in accordance with past conditions than our own, for which reason it may be said that America is producing architectural monuments, while we too frequently satisfy ourselves with mere buildings.

It will be said that what we have stated does not cover the case of the smaller firms who exist in America as they do here; but the example set by the thorough and methodical system of dealing with work, the results of a higher average degree of education, which has helped to eliminate the craving for originality, have their effect on the smaller practitioners also. The American architect's position is a better understood one than that of his *confrère* in this country, and his aid is sought by many who would here employ an engineer, to his exclusion. Summing up the American architect, he may be said to live in a strenuous world and yet to obtain more opportunities for quiet and thorough consideration of the problems which he has to deal with which are essential to artistic success.

The office of an English architect in large practice is too often filled with a number of assistants in receipt of small salaries, which they take until they can hear of something better, or perhaps start for themselves—in many cases without adequate preparation. The number of "permanencies," if we may use the word, is extremely small, and, with the exception of a few, the assistant who remains an assistant is admittedly a failure, for few of them occupy the position which many hold in America, which is practically equivalent to a salaried partnership. The architect, having assistance of an inferior class to that which the American architect can rely on, is forced to do more of the actual designing, and even detailing, himself, and if he has a large *clientèle*, with the best endeavour in the world the note of weariness and the evidence of want of consideration due to strain and fatigue will creep into his work.

Many architects might increase their reputation if they deputed more work to others, not because of a lack of ability on their part, but because it is not humanly possible for even a genius continually to exercise his creative faculties and do his best work.

The question resolves itself into this: the American system is made possible by the existence of a definite agreement as to what constitutes architectural excellence—a position which we hope we shall arrive at in time; it is made possible, too, by the recognition that individuality in design is not the great essential, but that sound architectural design is; also that the fact is recognised that the labourer is abundantly worthy of his hire, and that an architect should be able and trained to grapple with any semi-engineering problem. But the American recognises that to do this successfully it is necessary to obtain the advantages of a wise division of labour.

There will fortunately always be among us gifted architects whose love for their work and whose desire to do it well will lead to their satisfying themselves by carrying out a small amount of work with painstaking care. Such as these—and Bentley may be quoted as a great example—may succeed in making a name for themselves and doing honour to the art they practise by working on what we may call individualistic English lines, but the hope of the future for architecture generally is that we may learn something from that new continent which we are told is to redress the balance of the old.

Summing up, we cannot reconstitute the conditions under which the joiner, plasterer, and mason could be left to their own devices under general direction; we cannot afford to dispense with machine labour or to do without drawings and feel our way on the spot, but we can, by thought and organisation, secure the great advantage of the co-operation of several designers working in unison in the designing of our great public buildings, and so prevent their being the expression of weariness or effort. But, in order that this may come about, we must arrive at a better agreement among ourselves as to architectural style, and a recognition that incursions into the field of conscious originality are unworthy of the exponents of a great art.

NOTES.

The Devon and Exeter Architectural Society.

WE have before us the President's address of the Devon and Exeter Society, and the Annual Report for 1914. The Society has been in existence for twenty-three years, during which period it has done much useful work in "Lyonesse." The address and report contain, like all similar documents at this time, reference to the changes wrought by the war and to the destruction caused by it in France and Belgium. Twenty members of the Society are at present serving with His Majesty's forces, a large number for a comparatively small society; but in common with their colleagues throughout the country, the Western architects have given their services freely for patriotic objects. The President deprecated the suggestion that Exeter should be remodelled internally instead of developed externally. He says of the scheme proposed by the expert called in to advise the Corporation:—"To my mind all that is ancient and associated with the history of an old city like Exeter should be preserved and as far as possible improved, always bearing in mind to maintain its character. This production did not deal at all with the undeveloped land outside the city, but struck right at the heart of it. It proposed a grand square opposite the Museum in Queen-street with a Carnegie library, a Town Hall where the Higher Market stands, and art gallery at the corner of Queen-street and High-street, the detachment of the Guildhall, a garden and naturally a playground for children adjoining the Guildhall, the demolition of St. Pancras Church, probably the oldest church in the city, a production something like Old Temple Bar at the High-street end of Martin's Lane, and last, but not least, a new street from the front of the Guildhall to the cathedral yard. The scheme is very dormant now but gets a short awakening at times. Apart from its cost, to embark upon such an idea would detract from all the beauty of our present High-street, and whilst it may be fit for a modern town is out of all question for the historical City of Exeter. I am glad to say your Council have appointed a Committee to watch this scheme from our point of view."

Provincial Societies and Registration.

THE President of the Society referred to the wish of his colleagues for registration by Act of Parliament instead of registration by Charter, as is now proposed by the Royal Institute of British Architects. The Devon architects have always been of one mind about the question, and in common with other of the provincial societies are far more in sympathy with the Society of Architects than with the body with which they are affiliated. This is to be regretted, but it makes us more certain that we were right in considering that one of the greatest misfortunes which ever occurred in the politics of the profession was the failure to bring about the amalgamation of the Society with the Institute when it was proposed during the Presidency of Mr. Stokes. The sacrifice asked of the junior members of the Institute was a considerable one, but was nothing in the balance when compared with the advantages of unifying the whole profession, and though we are quite inclined to believe that the difficulties of obtaining a satisfactory Registration Act are almost insuperable, on account of the opposition which would have to be met from surveyors, engineers, and others, we think that a very large number of architects will only be convinced by actual defeat that such a measure is impossible, and the path would have been made clearer had a bill been actually thrown out in Parliamentary Committee. We are by no means clear that architects care much about "Registration by Charter," and, to put things colloquially, we doubt if the game is worth the candle. But, unfortunately, when the graver issues of war and peace are decided, we have once more to see these controversial subjects thrashed out in the profession; and we fear to no one's entire satisfaction, because nothing but the defeat of an attempt to obtain registration by Act will ever satisfy the Registrationist, and that attempt should be made by a united and not a divided profession. The proportions the two sections bear to one another are immaterial, the mischief is that they, at present, exist through the frustration of the union of the Institute and Society.

Some London Arcades.

THE "passage" or "gallerie" is a feature more common in Paris than in London. The *Times* of April 3, 1815, announces the projected building of the present Burlington Arcade, the earliest, we believe, after its kind:—

COVERED PASSAGE, Burlington House.—SHOPKEEPERS and PERSONS in TRADE.—It being in contemplation to make a communication from Piccadilly in a parallel line with Old Bond-street, through Burlington-garden to Cork-street and New Bond-street, by means of a covered passage with shops on each side, attention will be paid to persons of respectability desirous of renting such shops. . . . It is intended that the passage should have an uniform and handsome appearance, and that the shops should be constructed on an elegant and commodious plan. Address, post paid, to Mr. Ware, architect, 5, John-street, Adelphi.

The arcade, of seventy-two shops and rooms above, built after Samuel Ware's designs and opened on March 20, 1819, was erected by Lord George Cavendish (Earl of Burlington), who had bought Burlington House from his uncle, the Duke of Devonshire, to serve as a screen between Burlington House and its gardens and the houses in Old Bond-street. Lord George wanted to build a similar screen along the east side as well, but the tenants of the Albany resisted the project. The old and cumbrous railings were replaced, 1904, with the new entrance gates made by Messrs. Hill & Smith, of Brierley Hill, and shown in our illustration October 6, 1911, of the additions carried out by Professor Beresford Pite for Lord Chesham. Nash and Repton's arcade was built along the west side of the Haymarket Opera House, in 1816-9; then followed the Lowther Arcade, designed, together with the adjoining Adelaide Gallery, by Witherden Young as part of Decimus Burton's West Strand improvements of 1829-32, and the New Exeter Change. Young's Arcade, for twenty-five shops with six more in West Strand and Adelaide-street, had a passage 245 ft. long by 20 ft. wide, and being 35 ft. high, was lighted by a row of small domes carried on pendentives, which produced a striking and uncommon architectural effect. The Lowther Arcade, pulled down in May, 1902, for Coutts & Co.'s banking house, is illustrated in a set of drawings by Wm. Herbert, 1830. The New Exeter Change, 1842-3, by Sydney Smirke the elder, from Wellington-street to Catherine-street, had five bays, and was distinguished by the two spacious polygonal end-bays that skilfully concealed the obliquity of direction.* Of the more modern and similar structures we may mention those in New Oxford-street (west block, north side), by Pennethorne, 1845-6; Old Bond-street and South Kensington; the Sicilian Arcade, Southampton-row to Bloomsbury-square, by Messrs. Worleys & Armstrong; and the Piccadilly Arcade, by Mr. Thrale Jell, on the site of the Egyptian Hall and Nos. 166-73, Piccadilly.

Precautions against Epidemics.

A SPECIAL article in the *Times* calls attention to the possibility of outbreaks of epidemic disease caused by the war. Europe, it says, has been polluted, and now that the warm weather is approaching the danger is very actual, while the precautions that can be taken are necessarily restricted to the exigencies of war. According to its Medical Correspondent typhoid fever and infantile diarrhœa can be carried from place to place by flies, and there is at least a presumption that they assist in spreading cholera. For this reason he thinks it necessary that this country should take special steps to deal with the fly pest:—

"Our sanitary authorities," he says, "can achieve a splendid work in this matter. In all great cities the keeping of any sort of manure heap should be absolutely prohibited. Stables should be inspected with the greatest care and must be cleansed with disinfectants at regular and frequent intervals. Stable refuse must be removed at once, either to an incinerator or to some tightly-closed receptacle which will be emptied without delay. The flooring of stables should be inspected and all cracks or lodging places for dirt filled up promptly. Heaps of garbage or refuse of any kind must be dealt with upon similar lines, and it should be made a criminal offence to have such a heap upon private property. Regulations of this kind are in force in some places; but they must now be enforced to the very letter. In the country the problem is much more difficult; that it is solvable, however, scarcely admits of doubt. Here, again, the manure heap or 'midden' is the great danger. It must be dealt with as if it was a danger. Strict regulations should be enforced as regards its locality in relation to dwelling-houses, the means to be adopted for its emptying, and for its disinfection when emptied.

"This is a work of immense magnitude. But the need for a resolute policy was never so great as it is at present."

Anyone who in the least realises the insanitary conditions, say, of the flooded districts of Belgium now that the water is draining off will agree that precautions might well be taken here, and, even if the house fly is not so black as he is painted, a special attack on his breeding-grounds would have excellent sanitary results. Indeed, a general sanitary crusade throughout the country would not only be of national service by tending to prevent infection, but might also be of special service in finding employment for many members of the architectural and surveying professions. All architects and surveyors have a general knowledge of sanitation, and could quickly acquire any special experience that might be necessary. Owing to the direct action of the Government in withdrawing loans for building purposes, many public authorities are beginning, we understand, to reduce their architectural staffs. Would it not be possible to make use of their special knowledge in the direction indicated?

The Arts in War-Time.

AN Arts in War-Time Exhibition, promoted by the Professional Classes War Relief Council, was opened by the Lord Mayor at the Guildhall Art Galleries on Tuesday afternoon. This exhibition of paintings in oil and water colours and works in black-and-white has been arranged with the object of affording relief to artists who find their livelihood taken from them by the present conditions. As Mr. Colton remarked, in asking the Lord Mayor to perform the opening ceremony, the working classes generally are probably at this time more prosperous than ever before, but that is not the case with the professional classes. And of all the professional classes the artists have, perhaps, been hardest hit. The Lord Mayor, in formally declaring the Exhibition open, expressed the hope that the public would show its appreciation of that national asset, art, by making liberal and generous purchases now, when practical help was so much needed. The pictures exhibited come under two heads, gifts from generous artists for the benefit of the fund, and exhibits contributed directly by artists in need of assistance. On the whole, the works are just of the kind to appeal to the general public, whilst the best of them have been shown at the Royal Academy and other exhibitions. The names of contributors like Sargent, Solomon J. Solomon, and other well-known artists should ensure the complete success of this interesting and deserving effort.

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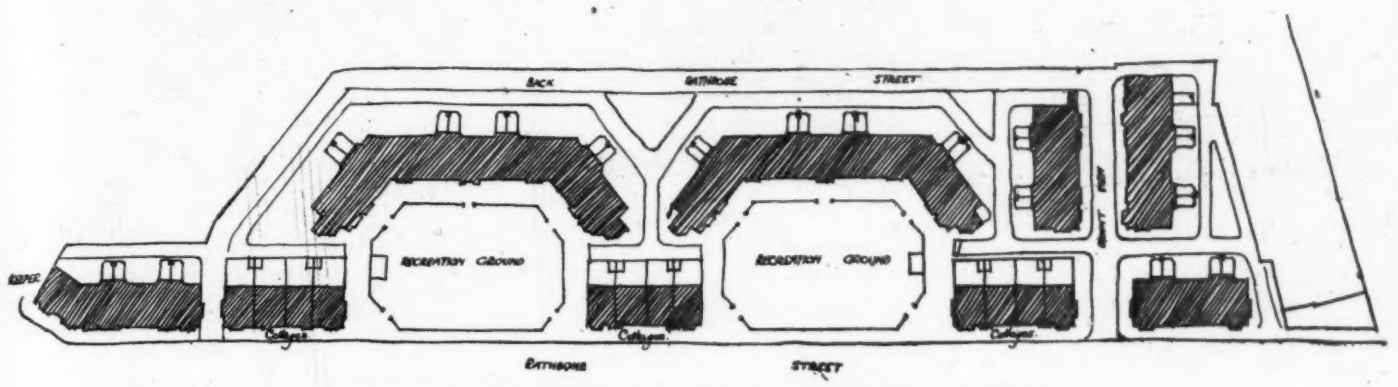
* Pulled down in 1863 for the Strand Music Hall. There is a plan in the *Civil Engineer*, VII., 305.



Liverpool Housing Schemes. Second Premiated Design: Block Plan.

By Mr. F. E. G. Badger.

THE LIVERPOOL HOUSING SCHEMES AND THE RECENT COMPETITION.

THE Liverpool Corporation has always been one of those authorities who have dealt seriously with the housing problem in the crowded parts of their city. Ever since the year 1864, when they first obtained parliamentary powers, they have systematically demolished their insanitary and dilapidated property, and have replaced it with scientifully conceived dwellings built according to the most enlightened models of their day. Their real advance dates from 1896, when the policy of the Housing Committee was directed definitely to restricting the occupation of their new dwellings to those families actually dispossessed from the insanitary property by the operations of the committee. Several areas have been dealt with since then, and in the buildings which have been erected from time to time under the ægis of the Housing Committee a steady development of type can be seen, so much in advance of the work done by other authorities that each Liverpool scheme has in turn become famous as indicating the progress in this branch of social science.

Until 1914, when the Hornby-street scheme was set on foot, little departure was made from similar schemes carried out in London and elsewhere, but a definite type of tenement dwelling seen in the Hornby-street plan has evolved itself, which was worked out on a large scale in the Bevington-street area in 1912, and on a smaller scale but in more perfection of detail in the St. Anne's-street area in 1913 (see the *Builder*, November 13, 1914). As far as the tenement unit is concerned, these schemes are ahead of anything else that has been done in England in the direction of housing the working classes, and they make all other types seem tentative by comparison. They are three stories in height, on the balcony system. No more than four flats on each floor are served by one staircase. This is usually embodied within the square of the blocks, although at Hornby-street isolated staircase towers were attempted. The balcony-yards are very cleverly devised, being triangular in plan, set between the projecting w.c. blocks, and reaching out to the dust shoots which receive the refuse from each floor. These show a great advance on the meagre yards or recesses appearing in most other schemes, and one of the useful features of the recent competition is, doubtless, the way in which they are still further developed in the premiated designs.

More imagination has been shown in some of the London County Council schemes in the lay-out of the sites, but in most of these cases the houses are more sumptuous and the expense more prodigal. The Liverpool schemes are workmen's dwelling *par excellence*, and their sites have been treated very simply and without elaboration. No doubt it was because of the special difficulty of the Rathbone-street area and some desire for advance in this particular that led the Housing Committee to resort to an open competition for this, their latest scheme. The result, which we have already announced, is as follows: First premium £100, Messrs. Biram & Fletcher, of St. Helens; second premium £50, Mr. F. E. G. Badger, of Liverpool; third premium £25, Messrs. Halliday & Paterson and C. Gustave Agate, of Manchester. Eighty-seven designs were submitted, and the assessor was Mr. H. Hartley, F.R.I.B.A., of Liverpool.

The Rathbone-street area is on the hill upon which the cathedral is being built, and lies between two main streets by which the latter is reached. Although the neighbourhood is famous for its stately streets and its wonderful Georgian houses, the derelict property on the site is as bad as any that has survived to this time, and its mere extinction is a work of grace. The area, while smaller than most of those previously dealt with, is very awkward in its shape, chiefly because of its narrowness and the necessity of preserving the approach to the backs of other properties, so that any treatment except a very undistinguished and frank one would have to be carefully considered before it could be workable. Many competitors have avoided dangerous adventuring, and have sent in block-plans entirely dull; others have been more daring, and have attempted to give their schemes some individuality, in which direction the premiated designs and only a few others have been successful.

Stated briefly, the conditions required nominal provision for 500 persons calculated on the basis of two persons per room, who were to be housed in three types of dwelling:—

(*a*) Self-contained cottages.

(*b*) Tenements containing living-room, scullery with bath, larder, water-closet, and one bedroom.

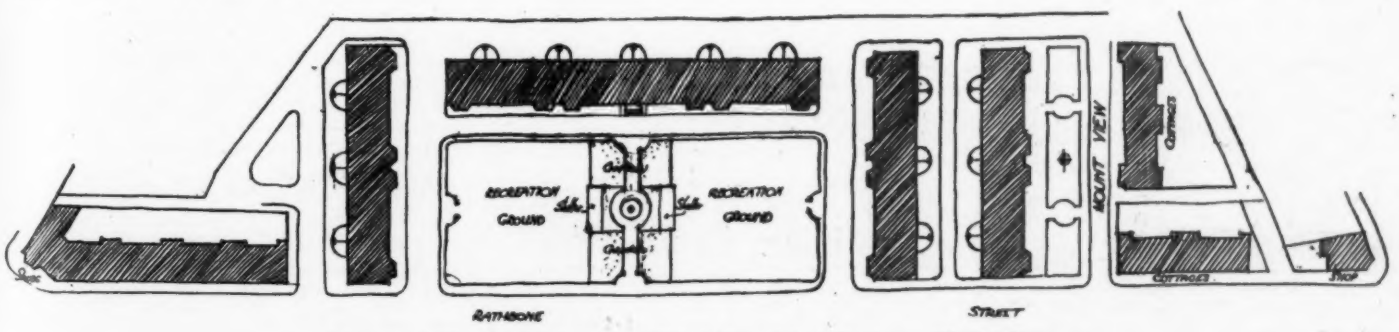
(*c*) Tenements as before, but with two bedrooms. A keeper's house and store was also required. As to the site, the rear portion of Back Rathbone-street, which gives access to the back of the houses facing the cathedral, was to be retained, Mount View was to remain (an exasperating condition), and recreation-grounds amounting to at least 1,400 sq. yds. were to be provided. In the result it appears that the committee's allocation of 500 persons to the site was a very reasonable one on the basis of three-storied tenements. Some competitors have provided more accommodation, and some in the attempt to confine all their blocks to two stories have unduly crowded them together.

It was with the block-plan that the competition was chiefly concerned; the previous Liverpool example in the tenement unit was too insistent to be scorned, and those who have passed it by have travelled a lower road; the cottages hardly afforded opportunity for divergence from previously established types. A sheet of details was asked for, which has caused some of the unwary to stumble; but all these things, and the elevations, could only come into the assessor's serious consideration on the heels of a block-plan which found his favour. There are lamentable examples of interesting units, fascinating elevations, and brilliant draughtsmanship attached to impossible block-plans, pathetic instances of ill-directed ingenuity and industry.

The first premiated design entirely deserves its position. It has a sane, logical block-plan, surprisingly marred by the intrusion of the keeper's house into an otherwise symmetrical scheme. This can only be regarded as a momentary aberration on the part of the authors which the assessor has wisely overlooked, and which will, we hope, be cut out in execution, as can be done without interfering with the scheme. The keeper can really be housed in any one of the cottages or flats overlooking the recreation-ground.

It is obvious that the most successful block-plans would have the recreation-ground as their key, open to Rathbone-street. The site is too narrow to admit of any other satisfactory arrangement, and this appears in all three premiated designs and in the best of the others. Narrow streets are thus avoided, and a feeling of openness imparted to the whole scheme. Messrs. Biram & Fletcher have avoided the lure of the axial line of the street opposite to the site, upon which some competitors have based their designs. The lead is a false one, as the point has no value in reality, and has only hampered those who have laboured for it.

The lay-out is very ordered in its lines, and the awkward outline and the jumble of backs behind the site is effectively screened. From Rathbone-street one sees the recreation-ground flanked by two blocks of tenements, symmetrical but for the keeper's house, and further down the street Mount View, again symmetrical, with the ends of the tenement blocks cleverly screened from the road. The outstanding feature of the plan is really the clever way in which the unsightly ends and backs are kept out of view. The canted angles of the recreation-ground are a device for getting round the re-entrant angle without the difficulties involved in a square corner; and the detached blocks keep the others cleared of



Liverpool Housing Schemes. Third Premiated Design: Block Plan.

By Messrs. Halliday & Paterson and C. Gustave Agate.

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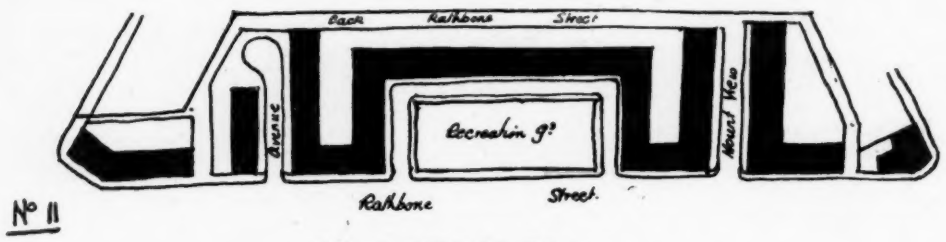


Liverpool Housing Schemes.

the involved planning which spoils the second design. The varying heights of the buildings in the recreation-ground is unfortunate from the architectural point of view, but the winners are right in placing their cottages in this, the best position on the site, and the arrangement enables them to push these buildings further back than the by-laws allow three-story blocks to be placed.

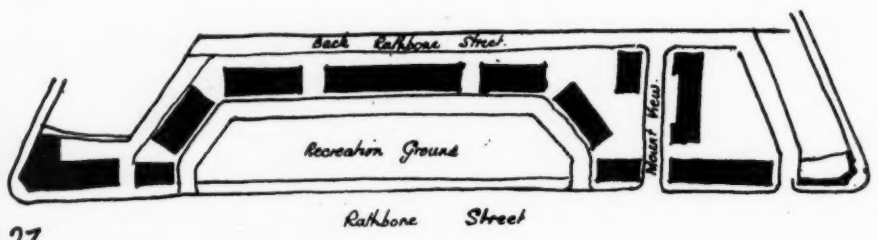
The authors have adopted the Liverpool type of tenement unit, making the yards more roomy. Their cottage plan is of the type adopted by most competitors, but the details are carefully studied; we noted particularly the way in which the working part of the scullery is roomy and light, while all the doors are kept away in a quasi-lobby, so that the scullery is in no way a passage to the back door from the kitchen. The elevations are simple and, if we except the wide arch over the cottage doors, well proportioned; but we feel that it becomes almost an obligation upon any architect building in this district to take the beautiful Georgian houses as his cue especially as they are in so simple and straightforward a manner. Anything else is little short of sacrilege. The detail drawing submitted in compliance with the conditions is an excellent testimony of study. There is nothing that is not quite orthodox; in fact, anything adventurous in the sanitary arrangements submitted to a municipal authority leads almost certainly to disaster.

The second premiated design has an attractive block-plan very ingeniously worked out. It is unfortunate that to obtain this result the author has had to exercise so much dexterity in the detail planning of his flats to overcome the difficulties created by the canted angles. A glance at the ⅛-in. scale plans shows much that is really clever, but it has all resulted in rooms of awkward shapes, and especially in narrow sculleries. An effect in the lay-out is not worth even one misshapen dwelling. While the dual recreation-grounds would work very well and result in an interesting plan, it seems a pity in so small a scheme to pass by the one chance of spaciousness that a large recreation-ground affords.

Mr. Badger has broken away from the Liverpool type of balcony-yard, but has not improved upon it. In his elevations he has adopted a mansard roof for the third story, and has sent in well-proportioned elevations rather too much elaborated in detail. The whole scheme is shown by very effective and careful drawings, and by cubing his buildings at 5½d. the author has provided accommodation for 162 more persons than the first premiated design allows for, at a cost of about £4,300 less!

The third premiated design, unlike the first and second, is entirely upon square lines, and is based upon the single recreation-ground facing Rathbone-street. The recreation-ground is spacious, and gains some dignity from the length of the three-story blocks round it, but while there are architectural advantages in banishing the cottages from it, the sociology is probably not so sound as that of the first design. The Liverpool type of tenement is again whole-heartedly adopted, and the elevations are designed upon simple Georgian lines.

The scheme provides accommodation for 554 persons, and, at the somewhat optimistic figure, in these times, of 6d., the cost works out at £26,697.

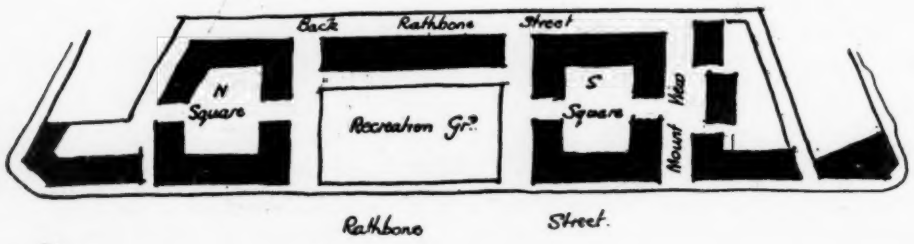


Liverpool Housing Schemes.

The authors' names were not upon the remaining designs when we visited the exhibition, but many were of great interest, although there were few cases where good block-plans were combined with workable detail. Our first impression was of the remarkable number of designs submitted by Messrs. Adshead & Ramsey. On further examination we came to the conclusion that the phenomenon was due to the remarkably close study given by their professional brethren to this firm's work at the Duchy of Cornwall Estate. In two or three cases the elevational treatment pays them the compliment of correspondence, if not of plagiarism. There are only one or two schemes that are entirely misdirected, although, viewed as a study of site-planning, the average achievement is disappointing.

No. 27 has very restrained and admirable elevations and a block-plan (which we reproduce) which aims at a broad recreation-ground, but Mount View is ill-considered. The idea is really the germ of the one which the winners have worked out so much better. The block-plan of No. 72, of which we give a sketch, is one of the most interesting on view. It is cleverly worked out on striking lines, but the outlook of the houses at the far side of the quadrangles would not be coveted. The flats are cleverly planned, in the south county line of development, with no more than two flats on each floor served by one staircase. No. 30 deserves mention for his very beautiful and refined elevations, but the block-plan had no chance of success and the cottages are poorly planned. We have advanced beyond the use of six consecutive winders in model dwellings.

No. 11 submits a type of block-plan which some competitors have followed, in which Mount View is duplicated on the left side of the recreation-ground, a point of symmetry which would really never be felt. No. 61 follows on these lines, and submits very refined elevations and details. No. 62 sends in elevations beautifully drawn, and admirable in most places except in the heart of a great city. No. 14 has a block-plan on original lines, in which half of the buildings frankly turn their backs on Rathbone-street (which is, indeed, scarcely worthy of more respectful treatment), and face an avenue driven longitudinally down the site, broken by a recreation-ground in the centre. The elevations of this scheme are among the best in the exhibition. In No. 70 the recreation-ground is enclosed as a quadrangle, but the site shows itself to be too narrow for this treatment, and the author is involved in a confusion, seen in many schemes, between the backs and fronts of blocks. In several block-plans which look fascinating on paper, it turns out on research that the front of one block faces the back of another, and unsightly ends are thoughtlessly protruded opposite ranges of living-room windows.



Liverpool Housing Schemes.

THE SURVEYORS' INSTITUTION:

THE REPORT OF THE LAND INQUIRY COMMITTEE.

AN ordinary general meeting of the Surveyors' Institution was held on the 12th inst. at No. 12, Great George-street, Westminster, S.W., Mr. Howard Chatfeild Clarke, President, in the chair.

The minutes of the previous meeting were read and confirmed.

It was announced that nineteen presentations had been received for the library, and also four donations, and it was agreed that the thanks of the Institution should be sent to the donors.

Papers were then read by Mr. C. S. Joseph (visitor) on "Urban Housing" and Mr. R. Strachan Gardiner (Fellow) on "Rural Housing," both dealing with the Report of the Land Inquiry Committee.

URBAN HOUSING.

In the course of his paper on Urban Housing, Mr. C. S. Joseph said:—"The portion of the Land Inquiry Committee's Report appointed for consideration to-night is that relating to Housing, which is pre-eminently first among the subjects dealt with in the Inquiry, not only by reason of its magnitude, but also on account of its intimate effect upon the health, prosperity, and progress of the nation. The very magnitude of the subject renders it extremely difficult to be dealt with, especially when it is desired, as is my task to-night, to examine the subject in a short paper.

The Report gives many examples and much information as to the existing conditions in the large towns and cities of England, and although we may differ in some minor respects, we must unfortunately admit that only too much of the unsatisfactory conditions disclosed by the Inquiry is true. These conditions have, so far as I know, not been denied by those who are well informed on the question, and have afforded a subject for effort on the part of social reformers for many years.

The Inquiry Committee's Recommendations.

The conclusions of the Inquiry Committee may be stated as embodying the following main principles:—

(1) That a large proportion of the population, to the detriment of the State, occupy overcrowded and insanitary dwellings, due to the scarcity of suitable accommodation at a reasonable rent.

(2) That the supply, whether by public authorities, public utility societies, or private enterprise, is very much less than the demand.

(3) That the high cost of land, the incidence of rates, and local by-laws militate against the supply being maintained.

To remedy the evils indicated in their conclusions the Committee make fifteen recommendations. It is impossible to deal with them all, but, again seeking to ascertain the principles underlying the conclusions, I think they may be stated as follows :—

(1) That as a result of a complete survey of their district, a local authority shall prepare a scheme for the provision of the necessary housing accommodation, particularly for the population likely to be permanently resident within their area.

(2) That where sites are not readily available, transit schemes should be promoted, and undeveloped areas town-planned, and congested areas replanned.

(3) That public utility societies should be assisted financially, to enable them to provide such accommodation.

(4) That insanitary property should be improved and adapted to modern conditions in order to mitigate the hardships of the present closing order procedure.

Overcrowding.

1. In the administrative county of London, excluding the extra-London urban districts, there were, according to the census of 1911, a population of 265,553 persons living in one-room tenements. The census returns for the same year also show that there were 32,351 tenements, each of one room, which were occupied by more than two persons. The returns also show overcrowding to an equal extent in tenements of two and three rooms.

Notwithstanding the overcrowding shown by these statistics, there has, however, been a great improvement in recent years. Large slum areas have been cleared, and large blocks of worn-out property have been pulled down and replaced by dwellings for the working classes. Those who have had experience spread over a period of years know how the best of the slum property twenty-five years ago was worse than some of the worst of to-day. Public opinion and the public conscience now demand a much higher standard, and, although the task is great and the progress apparently slow, those who can take a long view over a period of years can testify to the solid progress made. Apart from this, however, the effect of these clearances is much greater than appears at first sight. It is not limited to the persons displaced only, as they never, or very rarely, occupy the new buildings when erected. The new occupants vacate their dwellings and make room for the occupants of the grade immediately below them, thus relieving a pressure further down, and there is, therefore, a general levelling up. This, though slow at first, is cumulative in effect.

The provision of cheap means of locomotion has been the means of dispersing the population, and there is evidence of this in the East End, where overcrowding is not nearly so great as it used to be within quite recent years, so that the practice of paying key money for an empty tenement has now become extinct. This has had an effect upon site values to a most marked extent, and prices for land that could easily have been realised some ten years ago must now be discounted to the extent of 30 or 40 per cent.

The Question of Supply.

2. In dealing with the question of supply it must be borne in mind that a large number of people must live near to their work, and this has become increasingly difficult owing to the commercialisation of the central areas and the diminution of the area available for residential purposes. The result of this is, necessarily, the overcrowding of the area that remains.

For those persons who need not, or do not desire to, live in the central districts, housing accommodation can be provided in the suburbs where land is cheap, and the areas so built upon could, with advantage, be town-planned to prevent monotony and overcrowding on the site.

Concurrently with a great rise in the standard of the requirements demanded by the working classes there has been a marked increase in the cost of labour and materials used in building during the last twenty years, with the result that, with perhaps one or two exceptions, private enterprise has abandoned the attempt to provide housing accommodation in the central districts, as the possible return on capital could not exceed 6 per cent., and for some years past only public authorities, public companies, and public utility societies have made such provision.

The supply, however, still falls short of the demand, and in every instance that has come under my notice it is quite the usual experience to find all the tenements are let before the buildings are completed. At the present time there is a long waiting list of suitable tenants who desire to occupy tenements in blocks of buildings, of which I have intimate knowledge, as soon as any are empty. The same aspect of the problem is emphasised by the fact that in the whole of the buildings erected under my supervision the average loss from empty tenements, including loss of rent by reason of removals, does not exceed ½ per cent. on the gross annual rentals.

3. In my opinion it is not the case that the cost of land has so important a bearing on the problem as is indicated in the Report. I am aware that a great public authority, which has done much to stimulate the provision of good dwellings for the poor, has at times experienced a difficulty in designing dwellings upon the land available and to pay anything for the site; and in some cases it would even appear from their published reports that they require the site for nothing and a subsidy towards an estimated deficiency. Now, this is the more remarkable in view of the fact that they are specially placed so far as financial arrangements are concerned, many of their calculations that I have noticed carrying interest on capital at only 3 or 3½ per cent.

Notwithstanding this it is quite feasible to pay 7s. 6d. per foot for a site upon which dwellings may be erected and yet obtain a fair return on the capital outlay, and I have known instances where a public utility society has paid as much as 17s. 6d. per foot for land.

Although the cost of land naturally has a bearing upon the rent that has to be paid by the tenant in order to obtain the necessary return on the capital outlay, experience shows that in normal cases, where land does not exceed 5s. per foot, the charge per tenement attributable to the site does not exceed 9d. per week of the rent, and that even if the cost of the land were increased to 7s. 6d. per foot, the rent per tenement payable in respect of the land would only amount to 1s. 4d. per week.

There is some considerable difficulty in obtaining cleared sites in central districts, as it very rarely happens that a large area comes into the market as vacant land. There are, however, large areas, properly developed nearly a century ago, covered by worn-outs and unsatisfactory buildings with large gardens, standing therefore on extensive plots of land, which now only afford accommodation for a relatively small number of persons, and which cause much anxiety to local authorities and to the owners.

My experience has been that in many districts this class of property can be purchased, if the matter is properly approached, at a price which would represent but little, if any, more than the present-day value of cleared land, and at a figure which would enable properly-designed blocks to be erected, housing many more persons than are displaced by the demolition, lettable at rents within the means of the poorest, and returning a reasonable amount upon the capital involved.

As an example of this I may refer to the experience of the Guinness Trust. This Trust only lets to persons with a strictly limited income, who would probably not be taken as tenants by private owners or public companies. The average earnings of the head of each family is only 19s. 1½d. per week, and the total average income of each family does not exceed 23s. per week.

Public *versus* Private Schemes.

Public authorities cannot apparently cope so successfully with the problem as an interesting announcement which appeared in the public press would seem to indicate. The chairman of the housing committee of the authority concerned stated that it had been decided to abandon the idea of installing baths, as their provision would have entailed an additional 1s. per week to the rents. My experience has shown that the extra rent required where baths are provided is only 2d. per week.

A far more serious problem than the cost of the land is that of the rates. These, like the poor, we have always with us, and there has been a constant tendency to increase. We have only to look back, say, ten years, and observe what the increase has been, to see how serious is the position. The amount of the rates may mean the difference between success and failure of a scheme, an experience which has caused schemes propounded by public authorities and private persons alike to be abandoned. This is the more serious because the need for a large provision of good accommodation, letting at a low rent, is greatest in the poorer and overcrowded districts, which are, without exception, those which are burdened with the greatest need for public expenditure, resulting in the highest rate in the pound.

The Question of Compounding Rates.

Even after a scheme has been carried out, the progressive tendency of the rates renders necessary some adjustment of the financial arrangements in order to preserve equilibrium. It is not possible to modify the capital arrangements, and if the fixed charges are to be met the only alternative is to raise rents, irrespective of whether the tenants can properly afford to devote any larger proportion of their low earnings to rent. But this difficulty as to rent is further aggravated by the action which seems to be growing among London borough councils of reducing or refusing the compounding allowance. Surveyors know that this is an allowance that a borough council can make if they so agree with an owner of working-class dwellings in return for his paying rates whether the premises are occupied or not, and also for agreeing to be rated in lieu of the occupier and so simplifying collection. Some borough councils, notably Islington and Camberwell, decline to make any allowance, and are collecting the rates direct from the tenants. Although this increases the cost of collection to them it is also to the disadvantage of the owner, so that the necessity arises for increasing the rents payable by the tenants where the owner continues to collect an inclusive rent. The result has further been that the erection of dwellings is restricted in those boroughs, as no one will risk the erection where the allowance has been refused. I have personally advised against the purchase of sites in Islington, and lately also in Camberwell, and I have no doubt that in other cases agencies for the provision of dwellings have been similarly advised in similar circumstances.

I find that the actual increase in the rents that would have to be charged in consequence of the compounding allowance not being allowed amounts to as much as 3d. per tenement per week, or about one-third of the rent attributable to the land.

The cost of building generally, as compared with twenty years ago, or even ten years, has considerably increased, but the cost of dwellings has not increased at all. It is good practice that fresh and improved methods are designed to meet exceptional difficulties whether they be of greater requirement, a higher standard, or increased cost of production. This fundamental economic law has not been abrogated in the design and erection of artisans' dwellings. As the cost of certain methods increased it has been necessary to devote special attention to devising other means which would involve less expenditure, whilst not militating against sound work and a reaonable maintenance. That efforts in this direction have not been without success is shown by the fact that good block dwellings can be erected at a cost very little in excess of that of fifteen years ago, while the standard of the accommodation provided is far superior. It is to a considerable extent a question of construction and a readiness to spare no effort to economise the right way.

According to the latest tenders received, the very best class of block dwellings can be erected at a cost of 8·95d. per foot cube, and this figure includes the provision of a bath in each tenement, hot and cold-water supply, the use of drying-rooms, perambulator-sheds and covered playgrounds, and the fitting of Venetian blinds to every window.

I should also add that in this particular scheme the foundations were costly, so that I think my contention that the cost of building this class of property has not increased is justified, as, fifteen years ago, the cost was 8¾d. per foot cube, and did not include the modern conveniences mentioned above.

This success in first cost has not been at the expense of maintenance, as I find that the percentage of gross rents required for repairs even after ten years does not exceed 6 per cent.

I would now turn for a short time to a consideration of the remedies suggested by the Land Inquiry Committee. I propose considering these as summarised by me, and the first is :—

1. That as a result of a complete survey of their district a local authority shall prepare a scheme for the provision of the necessary housing accommodation, particularly for the population likely to be permanently resident within their area.

A complete survey of the whole housing conditions and requirements for each district can only be accompanied by good results, but in order to secure this it is not really necessary to await further statutory authority.

The Powers of Local Authorities.

In London, at any rate, the local authorities are empowered to make inspections in their districts with a view to ascertaining what nuisances, including overcrowding, exist, and have power to abate such nuisances and to secure the proper sanitary condition of all premises in their district. Notwithstanding this, when Lord Islington (then Sir John Dickson-Poynder) endeavoured to introduce into the Housing, etc., Bill, 1909, a clause making it obligatory to have a complete survey of a district every five years, so great an objection was taken to it that it did not obtain Parliamentary sanction. The Act did, however, contain a provision for a systematic inspection from time to time with a view to ascertaining whether any dwelling-house was in a state so dangerous or injurious to health as to be unfit for habitation. There is no time limit, although the Local Government Board may make regulations with regard to the performance of this duty.

The authorities, having ascertained the facts and framed an estimate of the needs of their districts, are to take steps for the preparation of a scheme for the provision of the necessary housing accommodation for those likely to be permanently resident within their area. From a return recently issued, the magnitude of such a task for London is apparent ; and if the local authorities were charged by Parliament with the duty of providing this accommodation, the task would be herculean. The bulk of the accommodation provided is in small houses in the suburbs, but there always remains a certain proportion that is necessary in the central district, where the areas available are always becoming smaller. According to the latest return available (1913) in the central districts of London there were only seven additional rooms provided for the working classes, the whole of the remainder being outside the central districts.

To avoid any misunderstanding I think I should make it clear that the reason why only seven additional rooms were provided in the central districts is that the number of new rooms constructed—namely, 6,181—were practically entirely counterbalanced by the demolition of 6,174 rooms.

There are no data to enable one to state with any accuracy the increase in the population of this central area, but it is interesting to note that the population of Greater London increased by 72,178 in that year alone. Even in the total number of rooms provided in the outside districts of London in the same year, only about 19 per cent. of the estimated increase would have been housed. It must be borne in mind, however, that the foregoing figures do not take into account the conversion of better-class houses for the occupation of persons of the working classes, of which no statistics are available.

Beyond their powers of inspection local authorities may acquire and demolish obstructive buildings and recoup themselves by levying a betterment charge on adjoining owners, or they may deal with a large or small area by purchase at market value, and rearrange and replan. This method of purchase under statute, although at market value, appears to me to cost more than, in my experience, property of this kind can be purchased for by private negotiations.

The local authorities also have the power to make by-laws fixing the number of persons who may occupy a house let in lodgings, and for the registration, inspection, draining, cleaning, and ventilation of such a house. There had long been a statutory provision as to an implied covenant that a house letting within certain limits of rent was reasonably fit for habitation, but, as values grew, this condition applied to but relatively few properties. In order to enlarge its scope, so as to cover the class originally intended, the Housing, etc., Act, 1909, raised the rent levels of the houses included, so that in London houses of £40 and less are subject to this covenant. Not only are the houses to be fit for human habitation at the commencement of the term, but the owners are to keep them in such a condition during the tenancy. If, in the opinion of the local authority, this condition is not complied with, they may require the landlords to execute such works as they may specify in order to make the premises in all respects reasonably fit for habitation. If their requirements are not complied with, they have drastic powers as to closing and demolition without compensation, and there have been some interesting appeals to the Local Government Board on cases so dealt with by the local authority. The effect of the implied covenant is to give the tenant a right to recover against his landlord for injury due to the defective condition of the tenement, but decisions have limited this right to the person of the tenant, and not to members of his family residing with him on the premises.

Local authorities may also be kept up to the mark by sect. 63 in the National Insurance Act, 1911, wherein it is provided that the Insurance Commissioners may recover from a local authority any increased payments due to bad housing conditions, if it can be proved that in the locality there is at least 10 per cent. more sickness than is normally the case.

Notwithstanding all these powers and the stimulus to activity existing in one form or another, there is still the cry, based on evidence which I fear has only too sound a foundation, that further statutory powers are necessary. I do not share the view that Parliament need again interfere, but local authorities should exercise their existing powers. It is not in the lack of powers, but in the neglect to exercise them, that the chief difficulty lies.

The return already referred to shows that in the central districts of London no new tenements were provided by any of the local authorities, and that in fact those bodies only provided 1,688 rooms out of a total of 18,114 provided in the whole of the extra-London districts. I think this proves my contention that the local authorities have not used the powers they already possess. I believe a good deal of the hesitation on their part to embark upon housing schemes is due to the fear that there may be a charge upon the rates. This fear is groundless, as I have completed six schemes for three local authorities in London, all of which show a profit on the working, and this profit could now be increased if advantage were taken of the borrowing powers under the Housing of the Working Classes Act, 1914.

There seems no reason why an annual licence should not be required for all houses let out in tenements, and this licence could be withheld at any time if the premises were considered to be unfit for human habitation.

All owners of working-class property where the annual value of the tenement does not exceed £20, and in respect of which the medical officer of health issues a certificate that the premises are provided with a proper water supply, are granted a valuable concession in the exemption of their property from inhabited house duty. I suggest that this licence should be an annual one, and that the medical officer of health should have power to withhold his certificate if the premises are insanitary.

2. That where sites are not readily available, transit schemes should be promoted, and undeveloped areas town-planned, and congested areas replanned.

Transit schemes of various kinds for rendering land in the suburbs available for building are obviously desirable, and a great deal has been done during the past few years in this direction. Where land has thus been rendered available, town planning of undeveloped land might be adopted with advantage ; but, in my opinion, too much has been made in the Report of the question of the number of houses to the acre.

Space in the rooms provided, and more rooms in each house, so as to be able to separate the sexes, is of far more importance than the amount of garden, which in most instances is not properly cultivated by the tenants. Large central gardens and open spaces and playgrounds, properly maintained by the owners, seem to me to be far more desirable.

There is an underlying fallacy in the suggestion that the number of persons or houses per acre necessarily means a high death rate and insanitary surroundings, for in nearly all block dwellings there are at least 600 persons to the acre, and the death rate is considerably under twelve per 1,000.

The Committee suggest the fixing of a maximum number of dwelling-houses to the acre, and consider twenty-four too many, so that, in their opinion, apparently, there should be fewer than 200 persons to the acre.

The Replanning of Congested Areas.

The replanning of congested areas is a far more difficult problem. It would be costly to carry out, and it would cause difficulties owing to the displacement of the working-class population ; and if the suggestions previously made were carried out, large sites would readily become available. The London Building Act is sufficiently stringent to prevent overcrowding upon these sites.

I think I should again reiterate the fact that, notwithstanding there may be overcrowding on any particular area, when the houses are demolished and blocks of dwellings erected in their stead, the number of persons housed is far greater, in practically every instance, than in the insanitary area demolished, as the new buildings are erected to a far greater height than the old ones which stood upon the site.

3. That public utility societies should be assisted financially to enable them to provide such accommodation.

I think the suggestion that public societies should be allowed to borrow a larger proportion than now of the capital required for the erection of working-class dwellings is a useful one, but the rate of interest would have to be kept very low if the schemes are to be self-supporting, more especially if it is desired to house the poorest wage earners.

This recommendation has already been carried into effect by the Housing Acts of 1914, which give powers to the Treasury to issue loans to any authorised society, company, body, or persons whose objects include the erection and improvement of dwellings for the working-classes, and whose constitution forbids the payment of interest or dividends at a rate exceeding 5 per cent. per annum.

4. That insanitary property should be improved and adapted to modern conditions in order to mitigate the hardships of the present closing order procedure.

The Committee's recommendation that insanitary property should be improved and adapted to modern conditions has been adopted in Birmingham and in some districts of London, but I am not at all in favour of this movement, as large sums of money are expended on these so-called improvements which, however, never bring the buildings up to the proper standard, but increase the life of the houses instead of utilising the land on which they stand to the best advantage and providing buildings which would comply in every respect with modern requirements.

The ostensible object of this method of dealing with such property is the lessening of expense, and to this extent the method may be said to be a success. It remedies the immediate defects, but, as so many inexpensive expedients prove ultimately, they are cheap and nasty.

The conclusion of my consideration of the matter is that much may still be done by the various authorities if they exercise to the full their existing powers. I would reiterate that what is wanted is not so much further legislative activites, but a wider use of those powers which already exist."

RURAL HOUSING.

Mr. R. Strachan Gardiner (Fellow) also read a paper, on "Rural Housing," in the course of which he said :—

"The reports have been summarised in previous papers, and, bearing in mind the limited time at my disposal, I propose to refrain from reference to the voluminous details of the existing state of things, and to endeavour to direct the discussion towards the goal that should be aimed at, the evolution, by those who have an intimate and practical knowledge of rural conditions, of a constructive policy that will bring practical results within reach, and so tend to the solution of a problem which, notwithstanding the periodical attempts of the Legislature and the earnest efforts for many years of housing reformers, is still awaiting a satisfactory settlement.

We may differ from many of the opinions expressed in the Report, which is viewed by

some with distrust as having political bias, but I think it will be agreed that it represents an enormous amount of most painstaking work, providing ample food for the most serious consideration, and, generally speaking, a strong case has been established for the immediate necessity of erecting a large additional number of rural cottages.

Criticism is to be welcomed, but I suggest it is not a time for destructive criticism, and having approached the subject from the point of view of one who has spent his life in rural districts, with the agricultural labourer chiefly in mind, I feel there is no question of greater importance, with the object of preventing our rural population from leaving the land, than the provision of an adequate supply of comfortable cottages.

The Effect of Education on Housing.

In any scheme of housing reform the education of the people in the requirements of sanitation, the value of light and air, and the evils of overcrowding is most essential. For example, it is little use stipulating for windows of a minimum area if they are never opened; and I have known cases where extra rooms have been added to cottages, and the occupants have lived as before and taken in lodgers. The standard of living is, however, rising steadily, and an element that is going to have its effect on the housing question is the influence of the great improvement of our elementary schools upon the children, who begin to appreciate the value of light and air, with cheerful surroundings, and in many instances become dissatisfied with the conditions of the houses to which they have to return.

The Inadequacy of Existing Accommodation.

Many of our existing cottages are undoubtedly inadequate and in an unsatisfactory condition, more particularly those belonging to small owners—sometimes working men—who are not in a position to afford the expense of repair or reinstatement. In a number of cases such cottages are only allowed by the local authority to be occupied owing to the lack of alternative accommodation. These small owners might in many cases be considerably helped by an extension of the Manchester Corporation practice, under which the local authority carries out the work and accepts payment by instalments. Interest at 4½ per cent. is charged on the outstanding amounts, and, on failure to pay, the corporation collects the rents.

The shortage of houses has, however, first to be made good before such other evils as overcrowding and insanitary conditions can be abated. In the past the large landowners have provided cottages on their estates at uneconomical rents, not only for their own dependants, but for employees of the State, local authorities, railway companies, etc., but bearing in mind the tendency to break up the larger estates, and the trend of agrarian legislation, this source can hardly be depended on in the future.

The effect on personal character of moving a family into a better cottage is very noticeable. Give the workman a good house and garden that he will take a pride in, and he becomes a more efficient worker and a better citizen. In rural districts there is a great difference between what may be called the comparatively fixed population and a movable population employed in a terminable industry, such as coal-mining. The latter do not take root in the same way, and naturally less interest is shown in their homes. To facilitate the housing of a mining population, local by-laws might well be modified as far as possible to allow of a more temporary class of building being erected.

The Questions of Cost and Wages.

The problem of the countryside, as in the towns, is the housing of the poorest, and the main difficulty one of cost. The Committee state that the reason which outweighs all others in preventing private individuals from building more cottages is that the wages paid do not allow an agricultural labourer to pay an economic rent.

The housing of those who can afford to pay such a rent may be left to the private enterprise which has hitherto provided 99 per cent. of the working-class houses in this country, although the bulk of them have been built in urban areas in response to the better prospects they afford there as an investment.

Building houses is a popular form of investment among the more thrifty workmen; they like to see something tangible for their money, but the feeling of insecurity caused by the Finance Act, 1910, dearer money, attraction of other investments, increased cost of building, and the responsibilities thrown upon house-owners by the Housing Acts, among other reasons, have tended to lessen the popularity of bricks and mortar as an investment for the time being.

But how is the man who earns £1 a week, or less, to be provided for? It cannot be done by cutting down accommodation and area of site; a workman is entitled to an adequate home, and the best allotment is an ample garden attached to the cottage, which is a means of adding substantially to his income. The health of the labourer is his stock-in-trade, and improved general health being one of the objects of reform this should never be lost sight of in the search for cheap construction. What is an economic rent in such cases? Are we to assume that the results of better housing benefits the individual occupier alone or should the indirect gain to the nation following an improvement in the general health of the community be taken into account? One can hardly expect that a man earning 20s. a week can afford more than 2s. 6d. a week for rent, and it is equally difficult to see how an adequate cottage can be provided for him at less than 4s. a week if a commercial rent has to be obtained. It is also most desirable that cottage occupiers should pay their own rates and take an intelligent interest in local government.

Unless the problem of housing our poorest workers in sanitary dwellings is to be abandoned one of two methods must be adopted. Annual grants will have to be made to local authorities to enable them to let to these people at rents based on their ability to pay, or wages will have to be raised sufficiently to allow them to meet an economic rent. The Inquiry Committee advocate a rise in wages to enable a labourer (*a*) to live in a state of physical efficiency and (*b*) to pay an economic rent for his cottage The Government have decided to deal with the rural housing problem by the establishment of a minimum wage based on this recommendation, and if the conclusion has been come to that it is the solution in the case of agriculture it seems inevitable that the same method will be adopted with other industries. We should therefore satisfy ourselves whether the agricultural labourer now receives an adequate return for his work and as much as the farming industry can afford to pay. If the reply is in the negative, everything possible in the way of increasing production, revision of land taxation, co-operation, and adequate equipment of farms will be necessary to put the farmer in a position to meet a rise in wages, and the proper proportion between cost of labour and rent becomes a question of considerable importance. An appreciable difference would be made if the payment of wages in kind, now a prevalent custom, were commuted to weekly cash payments. It appears to me that any artificial forcing up of wages would defeat its own end, as a farmer would be compelled to reduce his labour bill to the amount he could meet. An economic wage is quite as vital a matter as a commercial rent if the industry concerned is not to suffer. It would, however, be manifestly unfair to consider the case for uneconomic rents unless wages paid are the maximum, as such a method would amount to subsidising one class of employer at the expense of the community. Agricultural wages have risen in many districts during the last few years, while on the other hand so have the wages of those who labour in the building trade, and any further natural rise would probably be a gradual one. The increasing price of commodities has also to be taken into account as a balancing factor.

A further recommendation is that it shall be made a definite statutory duty of local authorities to provide adequate and sanitary housing accommodation for the working classes, where permanently required in their area. Theoretically it is already their duty to provide a sufficient supply of houses and to close insanitary dwellings, but in existing circumstances the task imposed upon them by the Legislature is too heavy for them to undertake, and the work must in some way be made more attractive. Block grants from the Exchequer appear to be the only effective means with wages and economic rents in their present relative proportion, and even in the event of a rise in wages, as advocated, there will always be a residuum of the poorest unable to pay an economic rent.

The Committee also advocate better facilities for the erection of cottages being given to public utility societies, and while it is hoped they will always be encouraged by loans for long terms at low rates of interest, it is difficult to see how such bodies can effectively deal with the purely agricultural problem of building scattered cottages on many detached plots of land throughout a country district, and, as far as I can see, we shall have to depend chiefly on the local authority where cottages are not provided by private individuals. Cheap money being so important, local authorities have the great advantage of being able to offer the rates as security, and building would in most cases be done by contract with local builders, so that they would not suffer by loss of trade.

Rates and Housing.

There is usually considerable local opposition to any part of the expense of a housing scheme being charged to the rates, which are already a rapidly growing burden and in itself a check to building. To bring pressure to bear on local authorities may tempt them to curtail necessary accommodation as a means of reducing cost, or to cross the line between economical construction and jerry building, which would be a disastrous result, subsequent repairs being quite as important a consideration as capital outlay. The numerous competitions for designs for cheap cottages during the last few years have generally failed to solve the difficulty from the rural point of view, low first cost being usually obtained by reducing accommodation to an impossible minimum and in some cases the omission of quite essential items of expenditure. The cost of schemes may in some measure be reduced by modifying by-laws with respect to width of roads and limiting the number of houses per acre, which would entail less road-making. It is to be hoped that landowners generally will follow the example set by some, and offer land where required at low prices—possibly 999-years' leases at moderate ground rents may be a means of facilitating matters. Any unnecessary cost in the development of a building estate eventually becomes a general burden in the form of higher rents. It hardly seems fair that all the expense of streets in a housing scheme, which become thoroughfares, and of sewers which are part of the main system, should be charged to the scheme. A proportion might reasonably fall on the rates.

Housing Authorities.

The Committee advocate a central housing authority, but while it may be admitted that the rural district council, the existing authority in rural districts, is not the most suitable, there is a general opinion that the work might well be undertaken by the county council, a knowledge of local requirements being very necessary. Members of rural district councils are often owners of house property in the district themselves, and they are so subject to local influence that the work may be very difficult for them. Such councils also are not in a position to offer their surveyors the salary that would attract the competent men required for the responsible duty of launching and working a housing scheme. A county council employs a qualified architect, and with the help of local advisory committees would be able to deal with schemes on a more extensive scale, and effect economies by standardising parts and purchasing in larger quantities. The use of local materials with a local type of plan, with which workmen in the district are familiar, means a reduction in cost, and a county conference of local architects, surveyors, and builders, who would, I feel sure, readily give their experienced advice, might be of great assistance.

Cheap Transit.

In dealing with rural areas their possible gradual transition to an urban character should not be lost sight of, and the Committee emphasise the value of cheap transit for moving the town labourer on to cheaper land and to more healthy, cheerful surroundings. It is worthy of note at the moment, when the courage and endurance of the Belgian soldier are fresh in our minds, that Belgium provided such cheap and rapid transport facilities for her workers, while only 23 per cent. of occupied persons were employed in agriculture no less than 56½ per cent. of the total population lived in country districts, which meant that about one-third of the urban workers were rural dwellers. In this country (1911) 78 per cent. of our population lived in urban areas.

One does not build a cottage without first preparing a plan, and it is just as necessary to

plan the situation and arrangement of cottages. "Village planning" should be on a scientific basis just as much as "town planning," and the rural housing authority might with advantage be armed with powers over building lines, area of site, improvement of roads, and reservation of open spaces. Cottages for ploughmen and stockmen would need to be built within easy reach of the farm steading, but for ordinary labourers it is better to concentrate them near villages, to allow of social intercourse and to lessen the distance children have to walk to school.

Country Requirements.

The cottage required by a country labourer is in many ways different to that which meets the necessities of an urban worker. The latter does not need so much accommodation; he can purchase commodities at a convenient distance in small quantities, and places of amusement and recreation are within easy reach. The farm hand in his frequently isolated cottage requires more room so that he can spend a winter evening in some comfort at home; he has to purchase food in greater bulk from some distance, coal and firewood by the load, and provision has to be made for a pig, garden tools, etc. If a man returns from his daily toil to a cramped living room, used by all in common, where housework is done, wet clothing hung to dry, and so on, can one be surprised if he seeks the more congenial surroundings of the village inn, and so wastes money that might be better spent in rent for a more comfortable home?

Housing the agricultural labourer is comparatively expensive, as cottages can rarely be built in large blocks: larger groups than four are seldom advisable and pairs are generally most suitable, as it is convenient to have a neighbour at hand in case of need, but a detached cottage is frequently very popular. I have found an intense objection among the better class country workmen to living in one of a row of cottages. The double-story cottage is, I believe, much more appreciated than the bungalow type.

It is evident that the necessity of reducing cost to a minimum does not allow of any expenditure on ornament, and a plain substantially-built cottage that looks well adapted to its purpose is in the long run much more satisfactory. Most of the old picturesque cottages, which are a pleasing feature of our countryside, owe their beauty not so much to architectural effect as to the mellowing effects of time, to their appearance of being thoroughly at home in their surroundings, and to an attractive wall covering of creepers. At the same time I am no advocate for one standardised plan or absolute uniformity of design, and much can be done in the way of variation without materially adding to cost. Careful planning should be mainly directed to the provision of the maximum amount of convenient house-room with the minimum quantity of material. In the majority of cases three-bedroomed cottages are required for the proper separation of the sexes and the prevention of overcrowding. Sufficient accommodation to enable a family to live together as long as possible may help the difficulty of meeting an economic rent from the combined income of the working members, where the earnings of the principal bread-winner are inadequate. A certain number of single men have also to be provided for, and in the case of a small family, where the third bedroom can be spared without causing overcrowding, a lodger represents an addition to the income of the household.

Cost.

About £200 appears to be the average cost of a suitable five-roomed labourer's cottage, and it is incumbent upon local authorities to use substantial materials that will, at all events, last for the period of the loan with the lowest possible outlay in repairs. This is one of their difficulties, having to build better houses, being in the position of trustees, whereas the demand is for lower rents. The most satisfactory walling materials are brick and stone, according to locality, and in my own district, where bricks are obtainable at 24s. per thousand, a 9-in. wall rough-cast in cement is found to be dry and economical. Eleven-inch cavity walls, where men are accustomed to building them, can be recommended, but if mortar is carelessly used and allowed to drop on to the damp-course and wall-ties, a number of conductors for damp are easily formed. Concrete does not appear to represent much saving unless a large number of cottages can be built at a time and a local supply of suitable material is available; there is also an unsatisfactory risk of dampness which can be eliminated in dealing with brick and stone walls. It is, however, an advantage to use concrete fittings such as doorsteps, window heads and sills, lintels, etc. Wood or galvanised iron, requiring double walls, cost practically as much as the more substantial materials when their comparative life and cost of upkeep are taken into account.

Under the Irish Labourers Acts nearly 50,000 cottages have been built in Ireland with State assistance for rural workers, with excellent results. There has been a great improvement in vitality and health, and while no attempt has been made to charge economic rents, wages have risen. The beneficial effects of comparison have also stimulated owners to put existing cottages in better order, and building by private enterprise is said not to have been affected, as the low wages paid prevents the serious consideration of providing cottages for these men as a commercial investment. The cottages built are mostly one-story buildings with a living room and two bedrooms, and cost from £128 to £211, according to locality, the latter figure appearing somewhat high. Rents vary from 4d. to 2s. 9d. a week, the average throughout Ireland being 1s. 1d., and they have been calculated according to the ability of the labourer to pay. The tenants in all cases pay rates, varying from 10s. to 22s. per annum.

Finance.

The Committee estimate that 120,000 new cottages are required in rural districts, and shortly after the outbreak of war the Housing Act No. 2 was passed, with the object of encouraging local authorities and public utility societies to embark upon housing schemes, chiefly with a view to lessening possible unemployment in the building trade, and a sum of £4,000,000 is available for advances. Before the war the rate of interest for loans granted by the Public Works Loan Commissioners to local authorities was 3½ per cent., and the annual repayment for interest and sinking fund for a period of sixty years amounted to £4 0s. 2¼d. per cent. Notice having been given that the rate of interest would be raised, schemes in process of formation were in some cases checked, and the rate has now been fixed at 4¼ per cent. Where a local authority is able to show there is unemployment in the building trade, 10 per cent. of the capital outlay will be advanced by way of free grant, and on this basis the annual repayment for every £100 is £4 3s. 4d., or 3s. 1¾d. per cent. more than before the war, equivalent to rather less than 1½d. per week on a £200 cottage.

Authorised societies before the war could borrow at 3½ per cent. for thirty years and 3¾ per cent. for forty years, the annual repayment amounting to £5 8s. 9d. and £4 17s. 3¾d. respectively. Under the new Act advances would be made up to nine-tenths of the total expenditure, made up of 10 per cent. free grant and the remainder by way of loan for sixty years at 5 per cent., the annual repayment amounting to £4 8s. 10d. per cent. These are valuable concessions although partly balanced by the rise in the cost of building owing to the war, chiefly accounted for by the increased price of timber.

No less than twenty-eight Acts of Parliament have been passed dealing with the housing question during the last fifty years, and, in conclusion, I would like to join in the general appeal for a consolidating Act."

Mr. J. M. Clarke, of Newcastle, proposed a vote of thanks to the lecturers for their interesting papers, and this was seconded by Mr. W. R. Davidge and supported by Mr. Edwin Evans. The President put the motion to the meeting and it was carried.

Mr. Gardiner and Mr. Joseph both briefly replied to the vote of thanks.

The Secretary announced that the next ordinary general meeting of the Institution would be held on Monday, April 26, when the discussion on the papers read by Mr. C. S. Joseph and Mr. Strachan Gardiner will be resumed by Mr. W. E. Riley, Superintending Architect to the London County Council.

The meeting then terminated.

SHREWSBURY'S GARDEN SUBURB.

Shrewsbury's first garden suburb was opened recently, and it has been named the Wingfield Gardens, after Major Wingfield, who has been mayor of the borough three times. Sixty-three cottages have been erected at a cost of £13,526, and are let at 3s. 9d. and 4s. 6d. a week.

ARCHITECTURAL SOCIETIES.

Devon and Exeter Architectural Society: Annual Meeting at Plymouth.

The annual meeting of this Society, which embraces the counties of Devon and Cornwall, and is in alliance with the Royal Institute of British Architects, was held on Saturday, March 20, at the Central Hotel, Plymouth. The chair was taken by the President, Mr. J. Archibald Lucas, F.R.I.B.A. (Exeter), and among those present were Messrs. C. Cheverton, Vice-President (Devonport), L. F. Tonar, J. Jerman, T. A. Andrews (Exeter), E. Coath Adams, A. S. Parker, B. P. Shires, A. C. A Norman, J. S. Davis, H. Watts, R. A. Mill, C. H. L. Varcoe (Plymouth), and Allan J. Pinn, Hon. Secretary (Exeter).

The annual report was presented by the Hon. Secretary. This together with the balance sheet was received and adopted. The President referred to the death of Mr. R. H. Arthur, of Plymouth, who was for many years a member of the Society and a past member of the Council.

The President then delivered his address, which we refer to on p. 352.

A cordial vote of thanks was proposed by Mr. B. P. Shires to the President for his excellent address and able conduct in the chair during the past year, seconded by Mr. C Cheverton and supported by Mr. J. Jerman.

A portion of the rules which had been revised was presented to the meeting, and after discussion was unanimously adopted.

The following officers and Council were elected for the ensuing year:—Mr. Charles Cheverton, M.S.A. (Devonport), President; Mr. L. F. Tonar, Licentiate R.I.B.A. (Exeter), Vice-President; Mr. A. Dobell (Exeter), Hon. Treasurer; Mr. Allan J. Pinn, A.R.I.B.A. (Exeter), Hon. Secretary; and Messrs. J. Crocker, F.R.I.B.A., C. Cole, M.S.A., and J. Jerman, F.R.I.B.A. (Exeter), to fill the vacancies on the Council of those retiring, as well as those remaining in office, viz., Messrs. A. S. Parker, F.R.I.B.A., Harold Watts, A.R.I.B.A. (Plymouth), A. J. Cornelius, M.S.A. (Plymouth), and J. A. Lucas, F.R.I.B.A. (Exeter).

The newly elected President, Mr. C. Cheverton, in taking the chair, thanked the members for the honour conferred upon him, and said he would endeavour to carry on the work of the Society as had been done in the past.

Mr. Cheverton proposed a hearty vote of thanks to the Hon. Secretary, Hon. Treasurer, and Hon. Auditor for their services during the past year, and bore testimony to the efficient manner in which they had carried on the business of the Society. The motion was supported by Mr. J. A. Lucas and Mr. J. Jerman, and was carried by acclamation and suitably replied to by the Hon. Secretary, Mr. Allan J. Finn, and the Hon. Auditor, Mr. L. F. Tonar.

Subsequently the members lunched together, after which they proceeded to inspect some of the old houses and buildings in Plymouth.

COMPETITION NEWS.

It must be understood that the following paragraphs are printed as news, and not as advertisements; and that while every endeavour is made to ensure accuracy, we cannot be responsible for errors that may occur.

The list of current competitions is printed on page 369.

St. Helens Police Buildings and Fire Station.

The assessor, Mr. Aubrey Thomas, of Liverpool, has made his award in the competition for Police Buildings and Fire Station at St. Helens as follows:—First premium, Mr Joseph Sunlight, Manchester; second premium, Messrs. Cleland & Hayward, Wolverhampton; third premium, Messrs. C. T. Adshead & P. H. Topham, Manchester. The designs will be exhibited in the Assembly Room at the Town Hall, for inspection by competitors, on April 29 and 30 and May 1, from 9 a.m. to 5.30 p.m. each day, and the exhibition will afterwards be open to the public.

Doncaster Town Planning Scheme.

We regret that, owing to a misstatement, the name of the author whose design was placed first in this competition was incorrectly given in our last issue.

The award has been made as follows:—First premium, Messrs. Ireland & Hanscomb, London; second premium, Mr. George A. Boswell, Glasgow; third premium, Mr. G. S. Stout, Whitehaven.

GENERAL NEWS.

Professional Announcement.

The partnership subsisting between Mr. George Pearson and Mr. J. Herbert Pearson has been dissolved, Mr. George Pearson retiring. The practice will be continued by Mr. J. Herbert Pearson at the same address (212, Upper Thames-street, E.C.) under the name or style of Geo. Pearson & Son.

The Board of Education and School Buildings.

The Board of Education have issued a circular directing the attention of local education authorities to the Treasury restrictions on borrowing and to the necessity for economising labour. The Board suggest that, while work on the provision and improvement of school buildings will have to be postponed, certain measures should be taken during the period of restriction to enable the postponed work to be resumed after the restrictions are removed with the least possible delay. The Board also say that in view of present circumstances it may prove necessary for them for a time to acquiesce in the continuance of unsatisfactory conditions which in normal times would call for speedy removal.

Competition with Germany and Austria-Hungary.

In connection with the campaign undertaken by the Board of Trade on the advice of their Advisory Committee on Commercial Intelligence to assist British manufacturers and merchants to secure trade formerly in the hands of German or Austro-Hungarian firms, the Board continue to receive a very large number of inquiries for the names of sellers or buyers of articles of which the sources of supply or markets have been interfered with by the war.

Special arrangements have been made in the Commercial Intelligence Branch of the Board of Trade for dealing with these inquiries, and List 14 of articles which inquirers desire to purchase is now ready and may be obtained by United Kingdom manufacturers and traders. British firms interested, as suppliers, in any of the goods mentioned should communicate with the Director of the Commercial Intelligence Branch of the Board of Trade, 73, Basinghall-street, London, E.C.

Lectures to Students.

In continuance of the scheme of the Council of the Society of Engineers for the delivery of lectures before student engineering societies affiliated to the Society of Engineers (Incorporated), Mr. Henry C. Adams, M.Inst.C.E., M.I.Mech.E. (Vice-President of the Society of Engineers), lectured on "Small Sewerage Schemes" to the members of the Crystal Palace Engineering Society on March 17. The chair was taken by the Principal of the Crystal Palace School of Engineering, Mr. J. W. Wilson, M.Inst.C.E., M.I.Mech.E., Past-President of the Society of Engineers, who was supported by the Vice-Principal, Mr. Maurice Wilson, A.M.Inst.C.E., Past-President of the Society of Engineers. On behalf of the students, the Chairman expressed their thanks to Mr. Adams for his lecture and to the Council of the Society of Engineers for having initiated the scheme.

CORRESPONDENCE.

Work During the War.

SIR,—It is very difficult just now for builders to get labourers, while there is a glut of carpenters, etc., skilled men.

Some ten years since an Act of Parliament was passed at a cost to London of many thousands, and I suggest that the London County Council should settle a form of notice to be sent out by the District Surveyors requiring the exits to roofs to be completed within three months.

This would give the necessary protection to the occupants of tenement houses and make a lot of work for various workmen.

INVICTA.

OBITUARY.

Mr. J. C. Hill.

Mr. John Cathies Hill, of the firm of Messrs. J. C. Hill & Co., of Kensington, who died a few days ago, was a well-known builder and brick-maker in North London, Peterborough, and elsewhere in the provinces. He began life as a journeyman carpenter; about thirty-five years ago he embarked in business as a builder with £300 capital. He built or financed the building of more than 2,000 houses in Peterborough and in and near London. In 1910 he was elected a member of the London County Council, but resigned his seat two years afterwards.

Mr. McCarthy E. Fitt.

We regret to announce the death of Mr. McCarthy E. Fitt, which occurred on February 28, after a short illness. The business will be carried on under the style of "McCarthy E. Fitt," builder and contractor, 118, Oxford-road, Reading, as heretofore.

FIFTY YEARS AGO.

Competitions.

Swansea Infirmary.—A design by Mr. Graham, London, has been selected. The proposed expenditure is £12,000. Tenders are to be applied for, and on obtaining subscriptions to the amount of £6,000 the works are to be proceeded with.

Chester Town Hall.—The whole affair has come to a standstill for the present; the lowest estimate, without the tower, being £21,600, instead of £15,000 stipulated, and the Town Council refusing to go on.

[*** We give the above extract from the *Builder* of April 15, 1865.]

Bradmore House, Hammersmith: An Interior View. (*See page* 360.)

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ILLUSTRATIONS.

Typical French Shop Fronts.

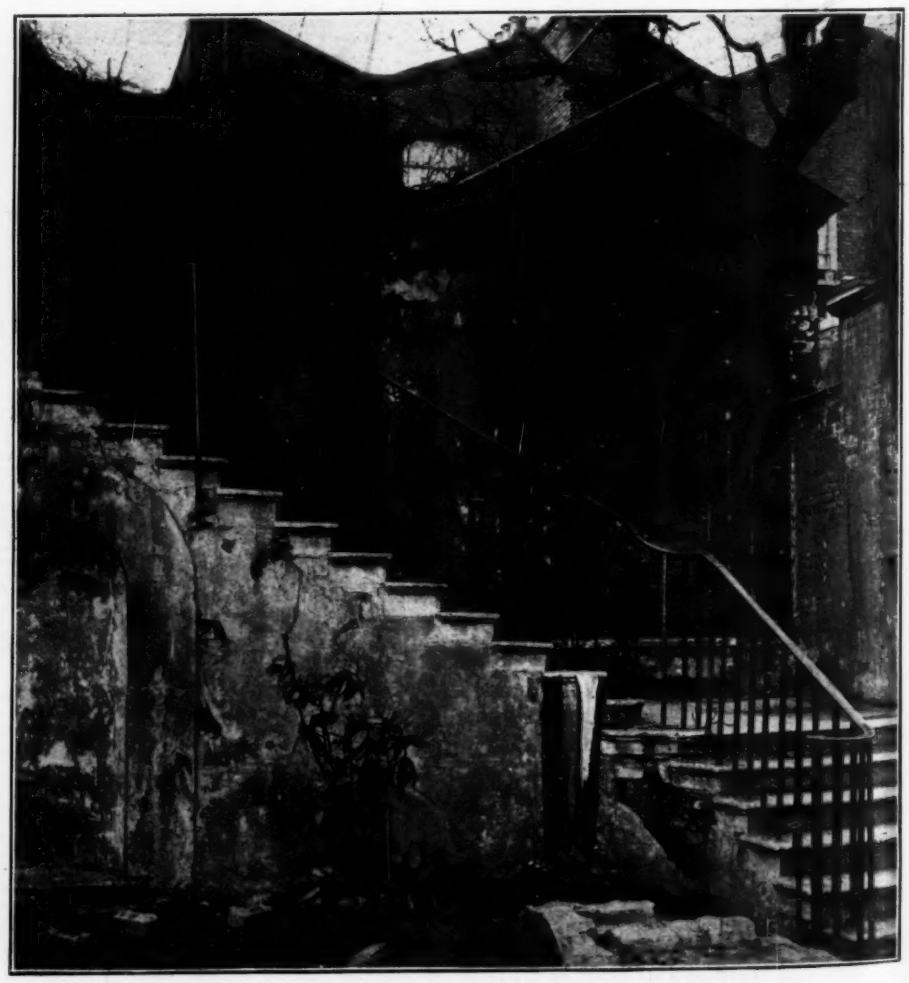
THESE illustrations are from a well-known French work on architecture, and they afford excellent suggestions in design. We shall give further illustrations of work of a similar character and interest in subsequent issues.

Bradmore House, Hammersmith: A Conversion of Historic Interest.

ONE of the forty great garages of the London General Omnibus Company, Ltd., has recently been erected upon a site in Queen-street, Hammersmith, which previously contained a very fine relic of old London domestic architecture. Such a great commercial undertaking as the London General Omnibus Company, Ltd., is apt to call to the mind the term, "motor-'bus"—an evolution of modern days which perhaps strikes a discord with architecture and its old traditions. Yet harmony may be considered to be restored by the fact that the acquisition by the company of a site with a building of historic interest upon it did not mean the ruthless demolition of the old building without any heed to treasuring the chief external and internal remnants that still remained in a very good state of preservation. Until the beginning of 1914 an old mansion, by name, Bradmore House, reposed, almost hidden from view, with its very simple rear elevation fronting to Queen-street, Hammersmith, and Hammersmith Church, and with its beautiful chief façade facing away from the main thoroughfare, and to the evidences of past day grounds of large area. Formerly the mansion was Butterwick House, and belonged, in the seventeenth century, to Baron Butterwick, Earl of Mulgrave. Shortly after 1700 the property was acquired by Mr. Henry Ferne, who added the beautiful east, or garden, front, together with a great Salon, about 30 ft. by 20 ft., and a smaller adjoining apartment, both of which rooms we illustrate in this issue. In the grounds were found portions of finely-carved fountains, and the illustration at side depicts a brick niche in gauged work which still remained in a good state. The demolition of this building is to be regretted, and many—especially the students of art who delighted in portraying, in pencil or chalk, many of the details of this building—may be pleased that everything possible has been done to save it from total destruction. The company and the architect decided that it was possible to take down the main front and re-erect it as the front elevation of the garage to be constructed upon the site, and to so plan the recreative centre as to use, in its entirety, the decorations of the old saloon. Very many difficulties presented themselves in the reconstruction of the elevation; the width of site was insufficient to include the total length of the old façade; essentials of garage construction demanded large entrances to the garage at the rear; the height of the ground story of the old building was insufficient to allow for the passage of a high motor-omnibus; and other difficulties of a constructive nature. A view of the elevation as reconstructed is given in our inset illustration—perhaps suggestive to the many persons who are not aware of the history of the building of extravagance for a garage. The stone base met the difficulty of height; the large openings were essentials deplored by the company and architect; a little reduction in the length of the front may be noticed by a comparison with the original. Every brick, moulding, and architectural feature was carefully taken down, numbered, and stored, and then carefully re-assembled at a shortly later date. The carvings and panellings of the two rooms before mentioned were presented to the London County Council by the company, who asked the General Omnibus Company to retain the decorations and let them form part of the new buildings, which has been done, and the company reconstructed it on the first floor in a similar position with regard to the façade as it formerly occupied. This room is used as a billiard-room by the employees of the company. The internal decorations of the apartment which adjoined the saloon have been set up at the Geffrye Museum, Kingsland-road, Shoreditch.

Upon the old grounds was erected one of the company's modern garages accommodating over 100 cars; the area of the site utilised for this purpose being about 40,000 super. ft. A general description is all that the writer is permitted to give. A great portion of the site is occupied by a large and a smaller garage, roofed by north-light steel trusses supported by framed girders of 75 ft. span. Surrounding the garages are grouped the various parts, such as the dock, machine shop, stores, petrol store, and various other places that comprise a complete garage required to be so carefully planned to meet the exceptional requirements of such buildings. In Great Church-lane is another entrance to the garage, adjoining the rear entrance to the District Railway Company's Hammersmith Station. Over the garage entrance is situated the Stanley Institute, so named after Sir Albert H. Stanley, the managing director of the London General Omnibus Company, Ltd., and the many London tube and other railways. This Institute was built for the employees of the District Railway, and an interesting constructive feature relative to this building may be described. An important essential in garage construction is the necessity of having as few stanchions and other obstructions as possible. This requirement necessitated supporting 400 tons of the Institute over a span of 70 ft., a load which was carried by a large framed girder 15 ft. high, centre to centre of booms, and weighing 29½ tons. Every advantage was taken to make the girder as high as possible to save a greater weight of girder which would have been required if a lower depth had been used. The lower boom, or tension chord, supported the first-floor joists; the top or compressional boom carried the roof principals; the covering to the sides of the girder formed one of the walls to a large hall. The girder, being about 2 ft. wide, allowed the centre to be used for ventilating purposes, such width allowing for the easy passage of a person for inspection and painting. Entrance to the hall was obtained by forming doors between the framing of the girder—in other words, entrance to the hall is obtained by walking through the girder.

The architect was Mr. J. E. Ashby, of the London General Omnibus Company, Ltd., and the constructional engineer, under the direction of the architect, was Mr. R. Vincent Boughton. The whole of the work was executed by the Works Department of the Company, which is under the control of the architect. The engineers for the steelwork were Messrs. Peirson & Co., of 17, St. Dunstan's-hill, E.C.



Bradmore House, Hammersmith: An External Stairway.

The New County Hall, London.

THESE illustrations are given in connection with the article which appears on page 361 in our Construction Section, where some details of the work will be found.

MEETINGS.

FRIDAY, APRIL 16.

Institution of Mechanical Engineers.—Ordinary general meeting. 8 p.m.

Town Planning Institute.—Mr. W. T. Lancashire and Mr. H. V. Lanchester on "Replanning and Redevelopment in Existing Centres." 8 p.m.

MONDAY, APRIL 19.

Royal Institute of British Architects.—Mr. Segar Owen on "The Design and Construction of Buildings for Industrial Purposes." 8 p.m.

TUESDAY, APRIL 20.

Architects' Benevolent Society.—Annual general meeting. 5 p.m.

WEDNESDAY, APRIL 21.

Edinburgh Architectural Association.—Annual business meeting and President's address. 8 p.m.

CONSTRUCTION SECTION.

THE NEW COUNTY HALL.

THE new County Hall now being erected on the Surrey side of the River Thames, adjacent to Westminster Bridge, for the London County Council, is such an important building that the methods of construction employed must be of interest to all those connected with the building industry, and, although it is impossible to deal with all the main constructional features in one article, a few notes are here given of the work which has been executed up to the present.

The scheme is a very large one, and it will be remembered that a competition was held among architects, as a result of which Mr. Ralph Knott was selected to design and supervise the work, and Mr. W. E. Riley, F.R.I.B.A., the Superintending Architect to the London County Council, was appointed as consulting architect to act in conjunction with Mr. Knott. It will be a great convenience to the general public and to architects in particular when the structure is complete and the Council, with its numerous departments, are in occupation, as the existing arrangements are very inconvenient and cause a lot of time to be wasted when it is necessary to consult with the officers of the Council, who are scattered in different buildings and in different streets. The site was acquired at a total cost of £600,000, and it has an approximate area of 6½ acres, with frontages of 750 ft. to the river and the Belvedere-road, 262 ft. to Westminster Bridge-road, and 350 ft. on the north side. Along the river frontage about 2 acres of foreshore have been reclaimed, and this necessitated the formation of a pile dam, constructed with timber piles 14 in. square. The foundation of the embankment wall abuts against this, as shown in Fig. 1, which is a cross-section of the wall and adjacent construction. This wall, which is being carried out under the direction of Sir Maurice Fitzmaurice, C.M.G., the late Chief Engineer to the Council, will have a total length of 800 ft. when completed, and it forms a continuation of the existing Embankment fronting St. Thomas's Hospital, as regards architectural treatment, with the exception of the central pylons and steps down to the water level, which were designed by Mr. Ralph Knott. The wall facing is executed with grey granite with bronze enrichments, and the mass is composed of plain concrete mixed with six parts of aggregate and one part of Portland cement. The foundations are carried down to a level of 35 ft. 6 in. below Trinity high-water mark, this depth taking into consideration the proposals which have been made for deepening the river bed below Westminster Bridge, and the width of the foundation concrete is about 20 ft., with a thickness of about 11 ft. The thickness of the wall at the base is about 11 ft., and above this it is constructed with a slightly curved battering face to the river, and two offsets, each of 2 ft., on the inside face, these occurring at heights of 6 ft. The embankment roadway and the outer part of the Members' terrace are supported by a series of concrete vaults which are constructed in conjunction with the embankment wall. A block plan of the whole building is illustrated in Fig. 2, and it will be seen that it is divided up into four distinct sections, viz., A, B, C, and D, this being necessary owing to the large area of the site and to facilitate reference and allow the different contracts to be dealt with. Each section is again divided up into blocks, which are numbered; thus section A contains five blocks, B four blocks, C three blocks, and D three blocks, giving a total of fifteen blocks in all. The Section lettered A occurs on the axial line drawn through the longer frontages, and this is the most important, as it contains the Council Chamber, chairmen's rooms, committee-rooms, and various other important departments, and the curved façade, which is a feature in the architectural treatment, forms the front of Block 3 in this section. The space which will be occupied by Section D is at present utilised by Messrs. Holloway for their building works, and consequently this portion together with the embankment wall adjoining will be the last to be executed.

Generally speaking, the building has a total height of about 128 ft. from the lowest floor level to the ridge of the roof, and there are two floors below and six above the ground floor. Two of the latter are practically constructed within the sloping roof, which is very high, although it is only in scale with the remainder of the building, and the first floor is the principal floor. A portion of the first floor plan is illustrated, this being of the Section A, and a general idea of the internal arrangement and divisions can be gathered from this. The basement and sub-basement floors are chiefly given up to storage rooms, with wide corridors between, and in the sub-basement trolley lines are provided in all these corridors to facilitate the transport of goods from one department to another. In addition to stores, spaces are devoted to the boiler-house, coal bunkers, pump-room, ventilating plant, electrical plant, staff club-room, and lavatories and rifle ranges. A cartway is formed at the northern end of the building from the Belvedere-road for the delivery of stores, coal, etc.

The whole of the work on these lower floors is of course finished without any architectural treatment on account of the purpose for which it is intended, there being one exception only, viz., the muniment-room, which is situated in the basement of Section B, and this is treated architecturally with panelling executed in plaster. It is not necessary to go into the details of the accommodation on the whole of the other floors, as they are divided up into offices generally for the various departments connected with the functions of the Council. The type of construction adopted for the building is very simple, and it may be described as a composite structure of brickwork and steel. The principle seems to be that of using brickwork for the supporting members wherever possible, with blue brick piers where necessary, and stanchions are only adopted when space is of primary importance or the concentrated loads from girders and similar members so great that steel supports were absolutely essential. The foundations are the essence of simplicity, consisting merely of a plain concrete raft 5 ft. thick over the whole of the site. It was found when investigating the nature of the soil that there was about 12 ft. of made

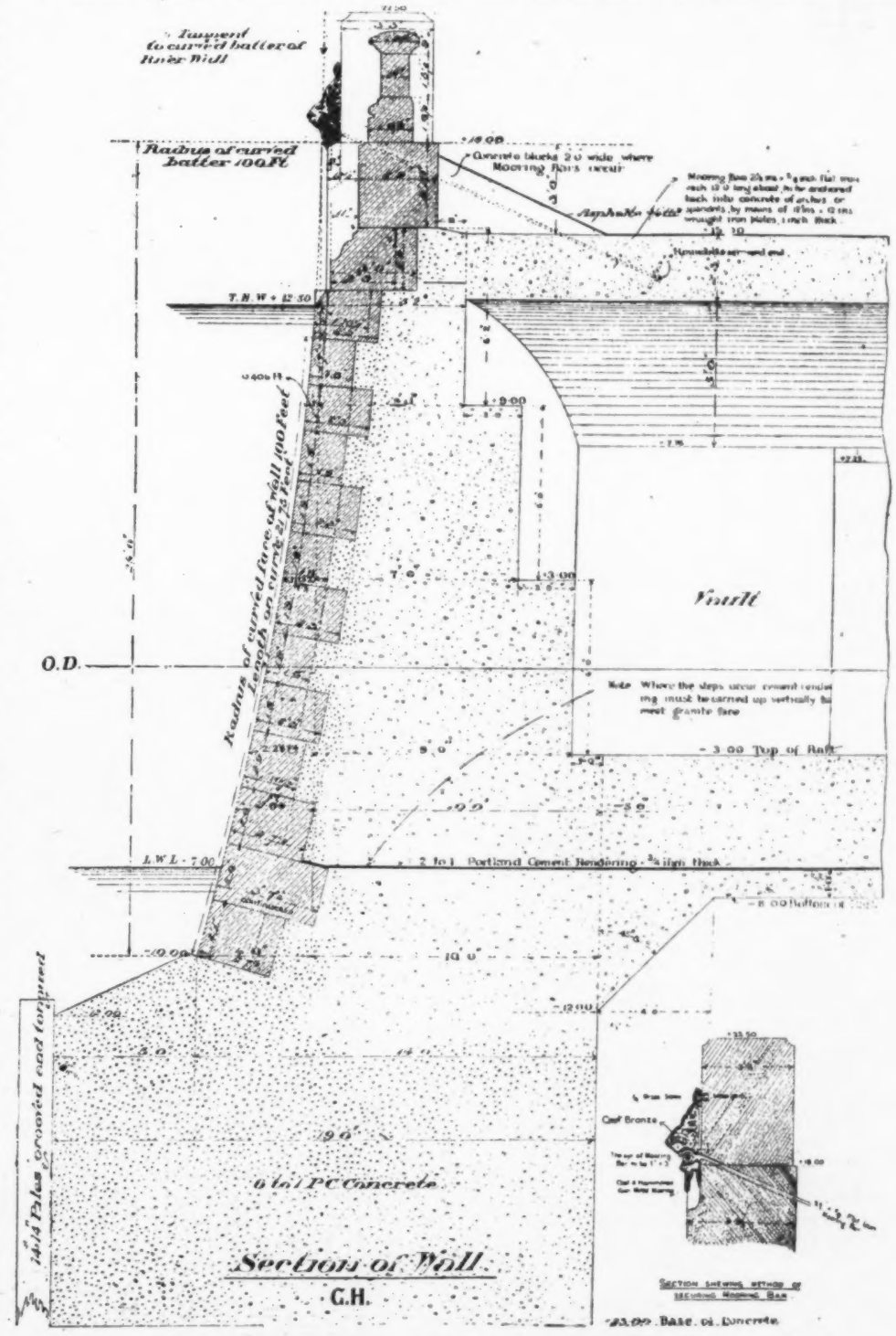


Fig. 1. London County Council Hall: Embankment Wall.
(From *Concrete and Constructional Engineering.*)

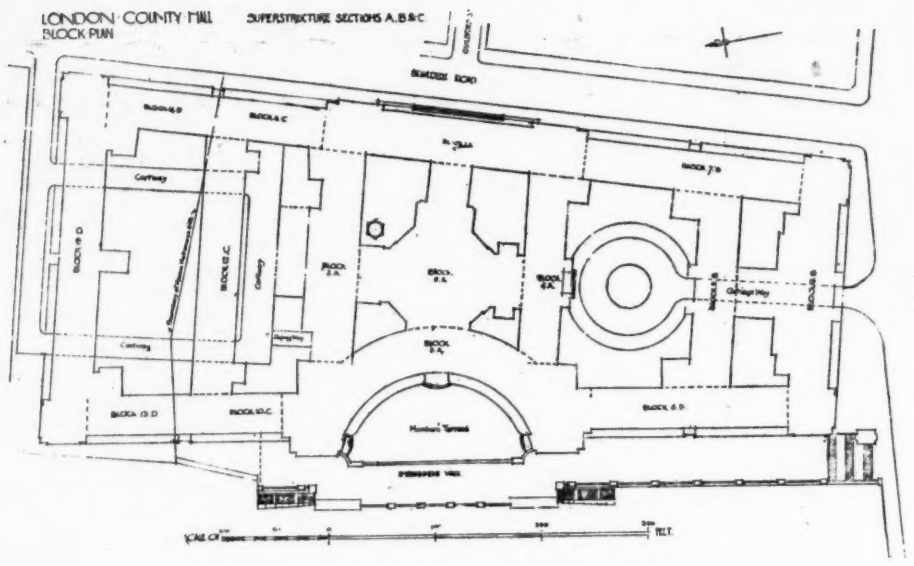


Fig. 2. London County Council Hall: Block Plan.

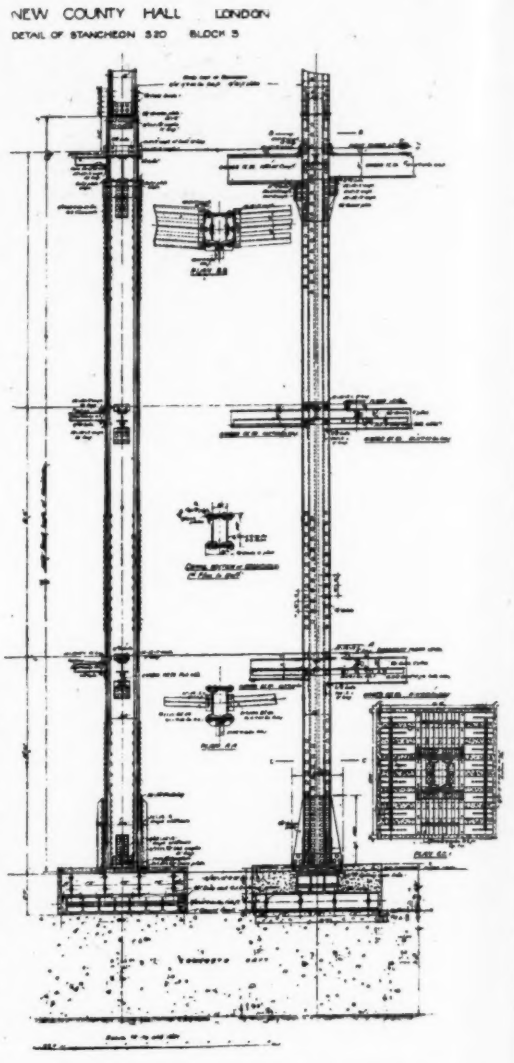


Fig. 4. London County Council Hall: Typical Stanchion Detail.

ground, 7 ft. of Thames mud, and 13 ft. of ballast overlying the London clay. The depths required did not necessitate the excavation of the ballast, and the concrete raft was therefore constructed on the top of this. The raft was formed with concrete mixed in the same proportions as those given for the embankment wall, and laid in five layers each 12 in. thick. The first layer was formed, and on this a damp course was laid before the remainder was filled in, the damp course consisting of one part of Portland cement and two parts of sand. The outer edges of the raft are slightly increased in thickness to form a base for the concrete retaining walls which are constructed around the whole site, with the damp course continued through the thickness of the walls and carried up on the outside faces of same. The whole of the site when completed will therefore be enclosed below the ground level with concrete walls and raft, with a continuous damp course to prevent any possible influx of water, and in addition a ½-in. layer of asphalt is laid in all piers and walls at a height of 1 ft. 6 in. from the surface of the raft to prevent any damp rising in the interior of the building. The retaining walls vary in height on account of the fall in the adjoining roads, but the average depth below the road surface is about 23 ft., and the thickness generally varies from 10 ft. at the base to 4 ft. at the top, offsets being formed on both inside and outside faces, and in some cases the inside face is also battered.

When a portion of the raft was completed and sufficiently hardened the whole of the work was set out in cement lines on its surface, and the outline of each wall and pier laid with one course of bricks, thus enabling the whole portion of the building to be proceeded with at once. No footings were built to the walls as none were required, all these being carried up from the raft, which ensures a proper distribution of the loads over the soil. The building is, of course, exempt from the provisions of the London Building Act and the supervision of the District Surveyor by Act of Parliament, but no advantage has generally speaking been taken of this, and the provisions of the Building Act have been taken as the standard to be followed.

The foundations to the stanchions are formed with grillages composed of two layers of rolled steel joists as illustrated in Fig. 4, which shows a typical stanchion detail with its foundation.

The area required for the grillage was calculated to give a pressure on the concrete raft not exceeding 12 tons per square foot, and the example here given is 6 ft. square with a lower layer composed of eight 10 in. by 6 in. by 42 lb. rolled steel joists, and an upper layer

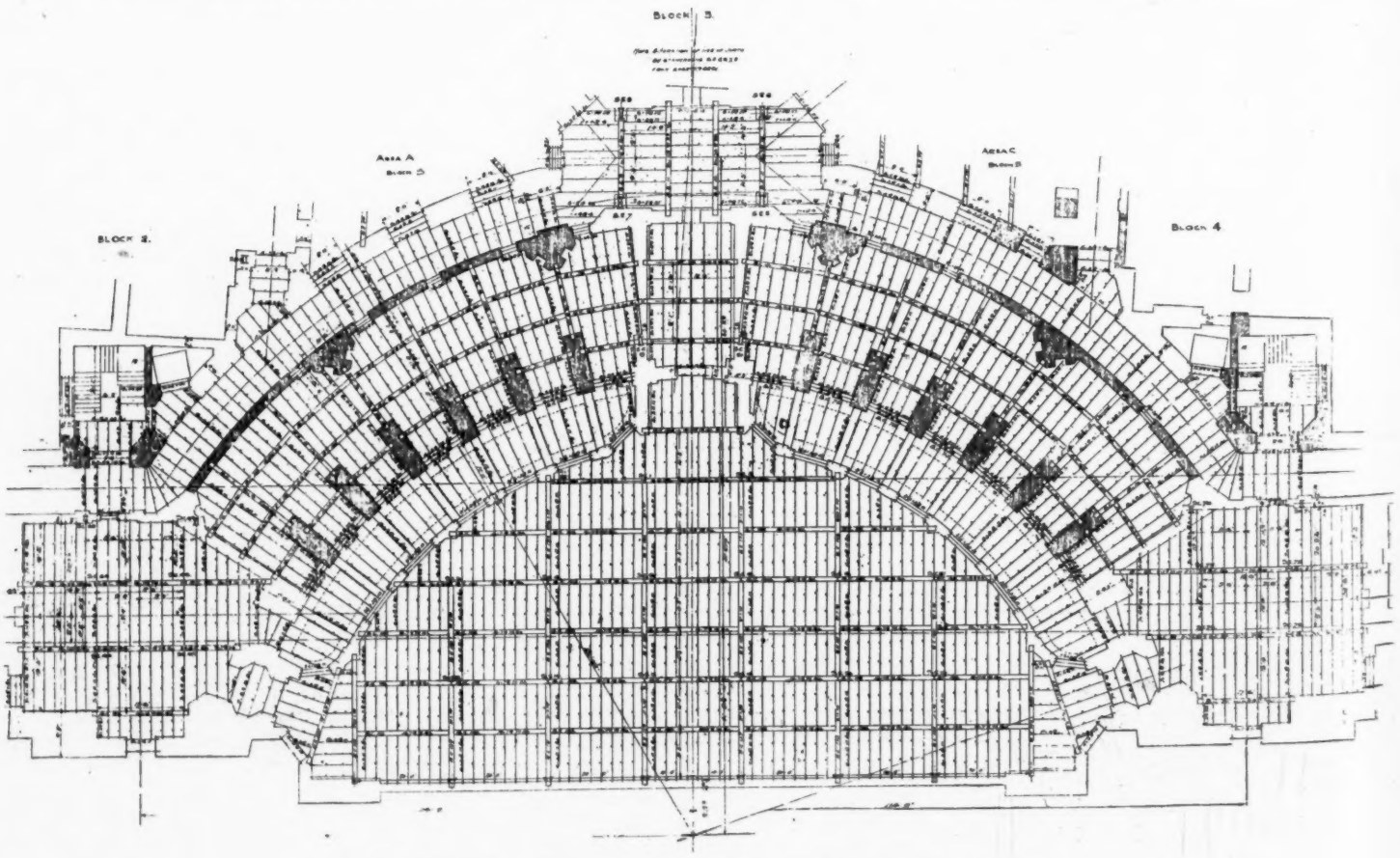


Fig. 3. London County Council Hall: Typical Steelwork Plan.

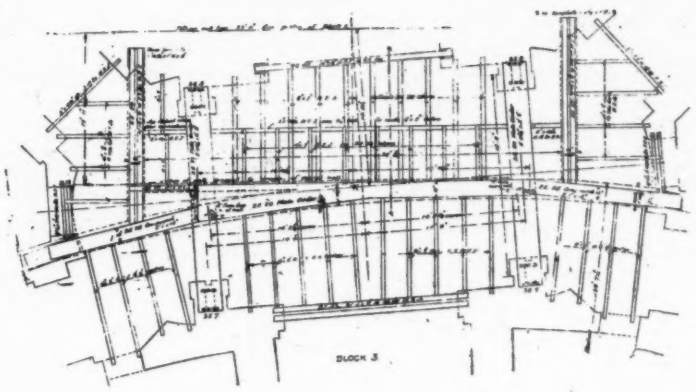


Fig. 5. London County Council Hall: Plan of Steelwork, Second Floor Level.

of four 14 in. by 6 in. by 57 lb. rolled steel joists. Both layers are stiffened by cast-iron distance pieces, with ¾-in. bolts through the webs. The grillages were placed in position on steel wedges, the stanchions erected and bolted to them, steel to steel, they were then carefully plumbed and levelled, and the grillages grouted under with neat cement. Cement concrete was finally filled in between and around the grillage joists, and the stanchions themselves where of hollow section are also filled in with concrete. The stanchions generally have been calculated in accordance with the provisions contained in the London County Council's General Powers Act, 1909, Part IV., the formula for one end or two ends fixed being used according to the conditions attained, and due allowance has, of course, been made for eccentric loading. The stanchion here illustrated has been designed to carry the calculated load of approximately 430 tons, and it is a compound section built up with two 16 in. by 6 in. by 62 lb. rolled steel joists and four 16 in. by ½ in. and two 16 in. by ⅝ in. plates riveted to the flanges. The gross area of the section is 88·46 sq. in., and the least radius of gyration 4·53, while the pressure per square inch on the gross area equals 4·86 tons. The top and base of the stanchion with gusset plates and stiffeners were machined square, and the base plate, which is 30 in. square and ¾ in. thick, was riveted on after. The gusset plates are 40 in. high, and angle stiffeners are provided as shown on the detail. The over-all length of the stanchion is 36 ft. 7 in., and various girder connections at the floor levels are shown. The floors generally are constructed with main beams and filler joists, ordinary simple sections being employed wherever possible, and compound sections only used where the loads are excessive. A typical steelwork plan is illustrated in Fig. 3, this showing the work at the basement floor level in the front portion of Block 3, Section A. The portions of brickwork which are hatched indicate blue brickwork required to carry the loads coming down from the upper parts of the structure. The floor of the Council Chamber, which is octagon-shaped on plan, is formed generally with radiating 8 in. by 5 in. by 28 lb. rolled steel joists fixed at an angle with the horizontal to obtain the necessary raising for the tiers, and in other cases a combination of horizontal joists and short steel stanchions are employed to obtain the same effect.

Some interesting steelwork occurs at the second-floor level, and one example of this is shown in Figs. 5 and 6, where the intersection of Blocks 3 and 5 in Section A necessitated some ingenuity on the part of the consulting engineers. Owing to the axis of Block 3 not being coincident with that of Block 5 an irregular shaped portion occurs on the plan at the intersection, and it was impossible to put in an ordinary shaped girder with rectangular flanges to carry the walls which separate the two sections. An uncommon girder was therefore designed which may be called a "fish-tail" type on account of its shape on plan. It has a total length of about 30 ft. 9 in. and it is over 5 ft. deep. At one end it has two distinct webs about 22 in. apart which converge and meet at a point somewhere near the centre of the span, and for the remainder of the length one web only is used, and the section is normal. At the narrow end the section shows a ⅜-in. web 60 in. deep, and three flange plates 18 in. wide at top and bottom, these being ⅝ in. and ½ in. thick, and cut to shape as necessary; 6 in. by 6 in. by ⅝ in. angles are used to connect the web and flanges, and 6 in. by 4 in. by ⅝ in. angle stiffeners are employed throughout the length. It was impossible to have a projection below the ceiling at this point, and consequently the whole of the girder is practically kept up above the second-floor level and suspenders, consisting of 9 in. by ½ in. plates, are attached to the bottom flange to carry the ends of some small floor joists which occur at a lower level in block 5. The ends of this "fish-tail" girder are carried by two plate girders, each 20 ft. 6 in. long, causing a concentrated central load to come upon the latter, and these are in turn carried by compound steel stanchions. The girders are of triple web type, each web plate being 2 ft. 9 in. deep, the centre one ⅝ in. thick, and the two other ones ½ in. thick. The section at the centre shows three flange plates at top and bottom, each 2 ft. 3 in. wide and ⅝ in. thick with 6 in. by 6 in. by ⅝ in. connecting angles between the plates and web. Stiffeners are provided throughout the length and these are spaced closely under the point of application of the concentrated loads, while a large bearing plate 1 in. thick fixed with countersunk rivets to the top flange plate is provided to form a seating for the supported girder. The stanchions carrying the ends of these girders are built up with two large rolled-steel joists and 18 in. plates riveted to each flange.

Another interesting piece of construction is that shown in Fig. 7, this illustrating a girder over 38 ft. long which also occurs at the second-floor level. It is situated below the floor and comes in the thickness of a partition, and to avoid projections beyond the face of this partition the width of the bottom flange was limited to 9 in. In addition to the load coming upon it at the second-floor level a fairly large girder immediately below at the first floor level had to be suspended from it.

It is built up with a web plate ⅝ in. thick and 5 ft. deep, and four plates, each 16 in. wide, for the top flange, while the bottom flange is composed of four 6 in. by 4 in. by ⅝ in. angles and four 10 in. by ⅝ in. plates, the latter being placed on edge and riveted outside the vertical legs of the angles which are in contact with the web plate. Stiffeners of 3½ in. by 3½ in. by ½ in. angles are riveted to the web plate at intervals of about 3 ft., and the various connections and other details are shown on the drawing. There are many other interesting items in the steelwork construction, but it is impossible to describe even a small number of them, but the details herein mentioned should be sufficient to indicate the efficiency of the design and the ingenuity displayed in dealing with special cases.

Generally speaking, the external walls vary from 3 ft. to 4 ft. 6 in. in thickness at the base and the internal walls from 2 ft. 7½ in. to 13½ in. As a great deal of weight is carried by the brickwork the piers are constructed of solid brickwork and not merely formed with partition blocks in the interior of the building, as is the case when the loads are carried at all points by steel stanchions. Some of the piers are of enormous size, especially so in the case of Section A, where those in Block 3 require 1,400 bricks to each course and in Block 1 900 bricks to each course. There are very few buildings where such a type of construction is employed during the present time, and although it is simple in character it causes considerable pressure on the substructure and foundations and must be comparatively expensive. All the brickwork is being built with cement mortar composed of one part Portland cement and three parts Aylesford sand, machine mixed, and, generally speaking, slow-setting cement is used.

The steelwork was designed by Messrs. Whitaker, Hall, & Owen, consulting engineers, 1, Gresham Buildings, Basinghall-street, E.C. The contractors for the building works here described were as follows:—Messrs. Price & Reeves carried out the embankment wall, whilst Messrs. F. & H. F. Higgs executed the concrete raft and retaining walls, and Messrs. Chas. Wall, Ltd., were responsible for the substructures. The superstructure contract now in progress is being carried out by Messrs. Holland, Hannen, & Cubitt, Ltd.

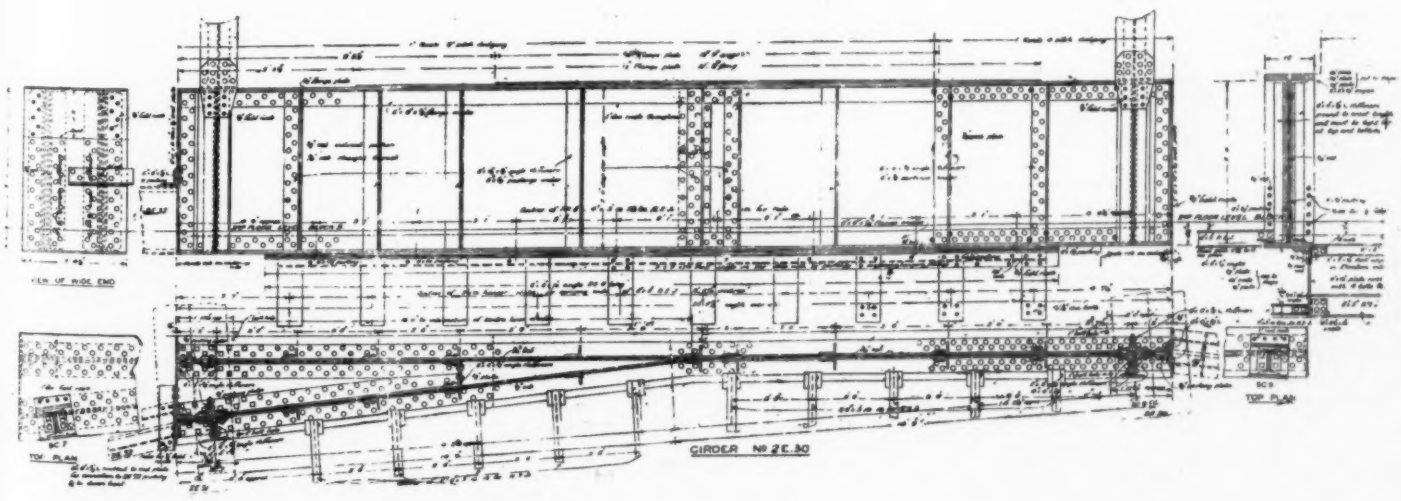


Fig. 6. London County Council Hall: "Fish-Tail" Girder.

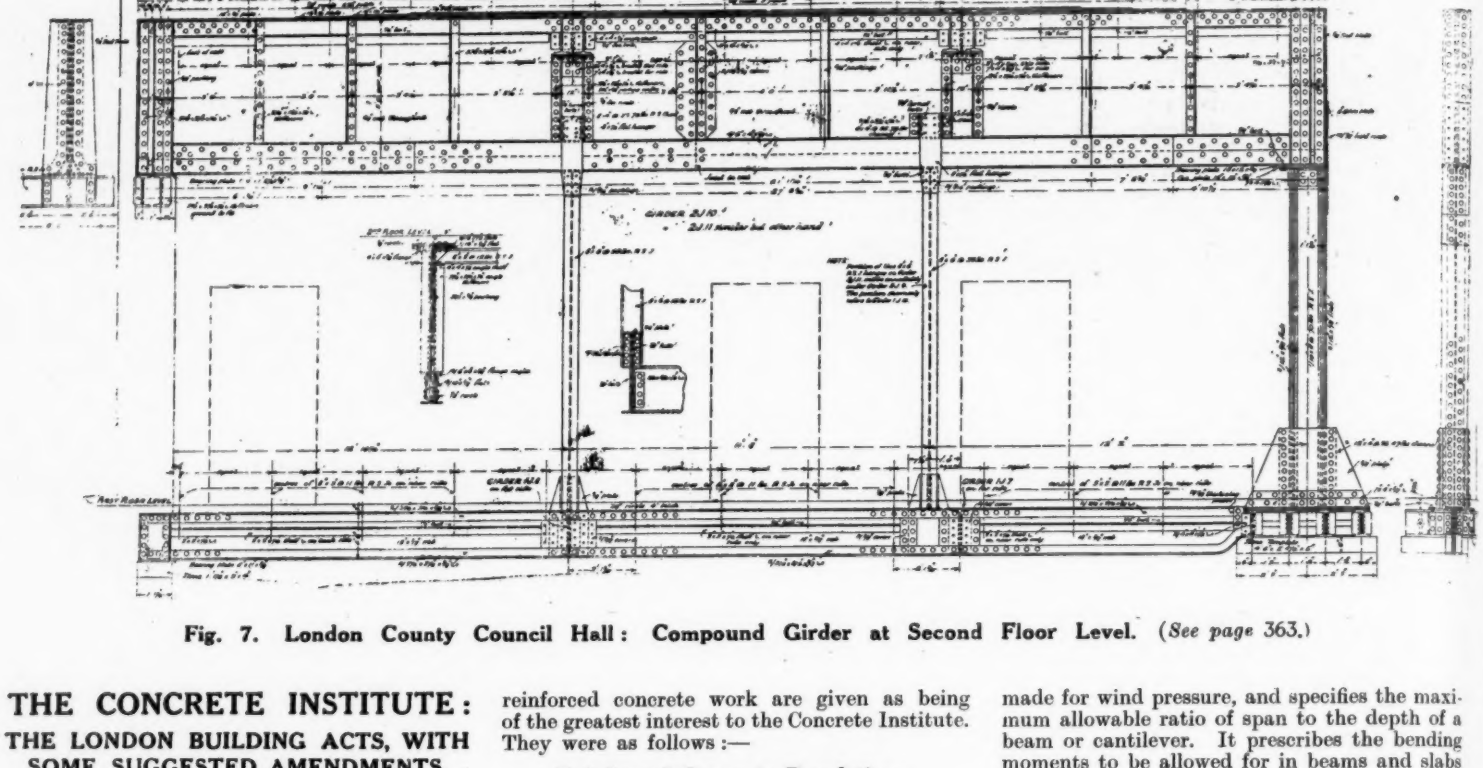


Fig. 7. London County Council Hall: Compound Girder at Second Floor Level. (*See page* 363.)

THE CONCRETE INSTITUTE:

THE LONDON BUILDING ACTS, WITH SOME SUGGESTED AMENDMENTS.

AT a recent meeting of the Concrete Institute a paper was read by Mr. Osborn C. Hills, F.R.I.B.A., M.C.I., on this subject, the following being an abstract:—

This paper is submitted with the view and the hope that a new Act will shortly be prepared embodying the existing laws, by-laws, and regulations. In 1894 our present London Building Act was passed, and thereby cancelled some thirteen existing Acts which had to be read together. Twenty-one years have elapsed since then; many decisions have been given in the High Courts, some of which completely annul the intention of the Act; many amendments have been framed, some of which have become law; and it will soon be necessary to repeat the process of 1894 and pass a new Act embodying all the existing laws and regulations, with certain desired modifications and improvements. Such improvements should be the carefully considered results of the various authorities: the Royal Institute of British Architects, the London Society, the Town Planning Association, architects, surveyors, structural engineers, builders, and property-owners should now unite in preparing such improvements in the Acts as they consider essential in readiness for submission to the proper authority. The London County Council "fathered" the Act of 1894 through Parliament, and the writer believes they have already collected much material for a proposed new Act.

It is not suggested that the Concrete Institute should take the initiative in the matter, but having already been recognised by Parliament in the 1909 Amendment Act it should be prepared at the right time to suggest such amendments as will conduce towards sound construction on economical lines.

The Act should be clearly understood by all who read with average intelligence. It has to be administered by the London County Council and district surveyors. There are two important ways in which the Act needs amendment (1) by making clear certain ambiguous and faulty wording or wording that has been the subject of ambiguous or unsatisfactory decisions, and (2) by adding to or deducting from the existing provisions and requirements.

The chief objects of the Acts are fourfold:—(1) To secure a proper width and direction of streets; (2) the sound construction of buildings; (3) the diminution of danger arising from fire; and (4) the securing of more light, air, and space round buildings.

The author then summarised the existing Acts and made detailed suggestions for their improvement.

It is impossible to deal with the whole of the summary and suggestions in this extract, but those points relating to the regulations for reinforced concrete work are given as being of the greatest interest to the Concrete Institute. They were as follows:—

Reinforced Concrete Regulations.

The regulations of the London County Council with regard to reinforced concrete are divided into ten parts, as follows:—

Part I. (*General*) describes the meaning of the term "reinforced concrete," specifies the application of the regulations and the nature of the materials to be used generally in reinforced concrete buildings, prohibits the use of any reinforcing metal for conducting electrical currents, and provides that copies of the plans and calculations, together with particulars of the materials to be used, are to be deposited with the district surveyor at the time when notice is served upon him under Part XIII. of the 1894 Act.

Part II. consists of data to be used for the purposes of the regulations. It contains a list of superimposed loads to be allowed for on floors to be used for various purposes and roofs of different slopes. It requires provision to be made for wind pressure, and specifies the maximum allowable ratio of span to the depth of a beam or cantilever. It prescribes the bending moments to be allowed for in beams and slabs with various degrees of end fixing under different dispositions of loading. It specifies the maximum stresses to be allowed on concrete of various proportions, and in steel. It makes provision for anchoring the ends of all tensile and shear reinforcement, and specifies the modular ratio to be assumed in beams and pillars.

Part III. (*Beams and Slabs*) contains regulations as to the mimimum diameter and

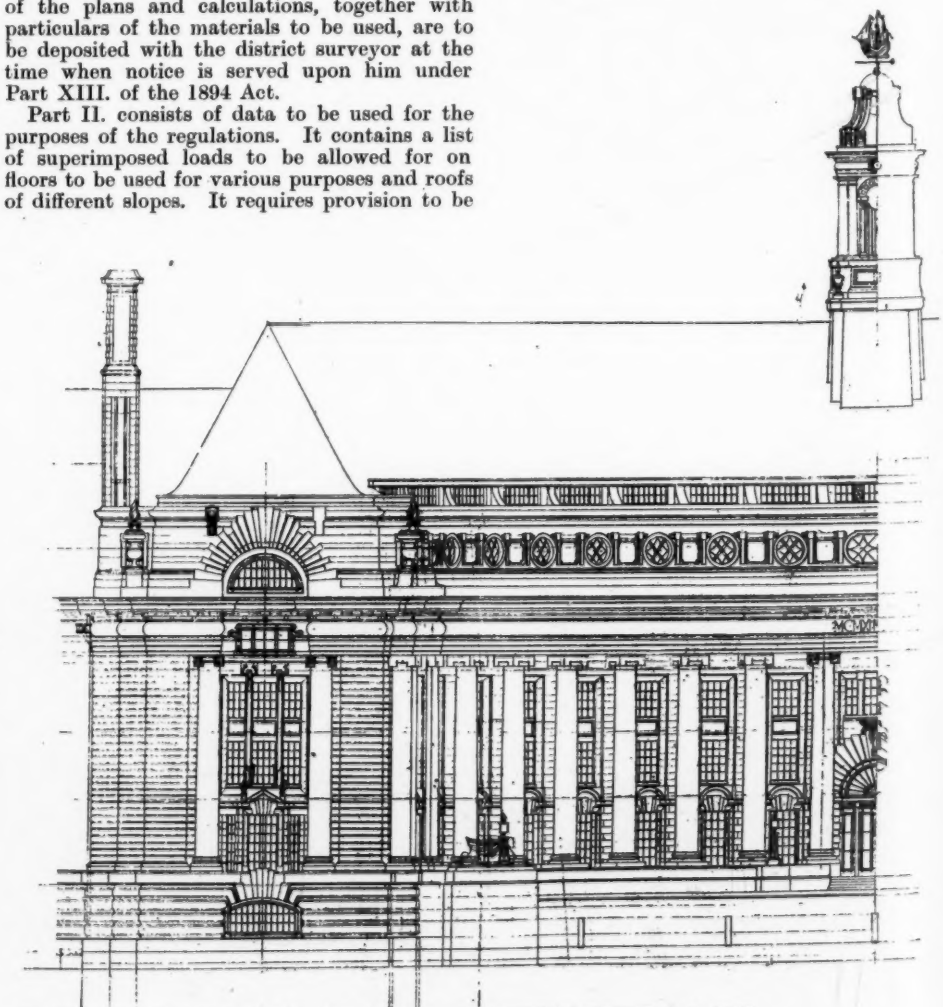


Fig. 8. London County Council Hall: Elevation to River. (*See page* 363.)

disposition of the steel reinforcement and the minimum thickness of slabs, and regulations as to notation and formulæ to be used in calculating the resistance moment in beams and slabs.

Part IV. relates to pillars and struts, and defines the terms "pillar" and "strut" and contains regulations as to the minimum and maximum diameter of reinforcing rods and their disposition and minimum area, regulations as to notation and formulæ and tables to be used in calculating the permissible load with various degrees of end fixing.

Part. V. contains regulations as to walls, specifies the minimum thicknesses allowable, and the maximum area of openings permitted. It is to be noted that party walls and division walls are allowed to be constructed of reinforced concrete, and need not be of the thickness prescribed by the 1894 Act.

This is a variation from the provisions of the 1909 Act in the case of steel-framed buildings, which require all party walls to be of the thickness prescribed by the 1894 Act.

All brickwork, stonework, and plain concrete are required to be executed in Portland cement and mortar, and the allowable pressures on brickwork so built are specified. No regulations are given as to the allowable pressure on stonework built in cement mortar.

Part VI. contains regulations as to the allow able pressure on various beds of natural ground, and also limits the pressure on plain concrete in foundations.

These are similar to the provisions of sect. 22 (24) and (25) of the 1909 Act in the case of steel-framed buildings.

Part VII. (*Protection*) contains regulations as to the minimum cover of concrete over the metal reinforcement.

Part VIII. (*Materials and Testing.*) This part contains regulations as to the quality, size, and proportions of the materials to be used for making concrete, with a table of the ultimate compressive stresses which must be attained for various proportions at the end of one month and four months after mixing. Regulations are also made as to the manner of mixing and placing the concrete. Nos. 165 to 167 give directions as to the quality and treatment of the metal reinforcement.

No 168 is printed amongst the regulations as to "steel," though it would apparently come better under the next set of regulations headed "Tests and Testing," which specify the maximum test loads to be applied; such tests are not to be made within ninety days of the date of laying the concrete.

Part IX. contains regulations as to "Formwork or Centering."

Part X. relates principally to workmanship, providing that the work shall be carried on as continuously as possible, that it shall be protected from too rapid drying and from frost, and that concrete shall not be laid when the temperature is less than 7 deg. above freezing.

No 185 is a most essential regulation prohibiting the cutting away of concrete for pipes or any other purpose in such a manner as would reduce the strength of any part of the structure below the standard set up by the regulations.

The remaining three regulations deal with woodwork, etc., fixed in or on the concrete.

There does not appear to be the same difficulty in determining whether the regulations as to reinforced concrete will apply to a particular building as there is in determining whether a building is or is not a steel-framed building. Regulation 2 states that "These regulations shall apply *only* to the construction of buildings of reinforced concrete in which the loads and stresses are transmitted through each story to the foundations by a skeleton framework of reinforced concrete, or partly by a skeleton framework of reinforced concrete and partly by a party wall or party walls."

Sect. 22 (29) of the 1909 Act provides that "It shall be lawful to make any addition to or alteration of or to do any other work to in or upon a building in accordance with the provisions of that section provided that the loads and stresses in the part of the building so added or altered, etc. . . . are transmitted from the roof to the foundations by a skeleton framework of metal . . . and the provisions of this section shall in all respects apply to such part of a building as if the same were a separate building."

There appears to be no similar provision in the regulations, though from the wording of clause 6 it appears to be contemplated that additions or alterations may be carried out under the regulations. In my opinion it would have been well to have inserted a similar clause to sect. 22 (29). It would also have been better to make the regulations applicable in all cases where reinforced concrete is used. In the present circumstances there would appear to be no regulation as to reinforced concrete floors in ordinary or steel-frame buildings.

In the regulations as originally drafted there was a provision similar to that in sec. 22 (18) of the 1909 Act, viz., "In every building of the warehouse class a notice shall be permanently exhibited in a conspicuous place on each story of such building stating the maximum superimposed load per square foot which may be carried on any part of the floor of such story." This provision does not appear in the latest revision of the regulations. In my opinion such a regulation is even more desirable in the case of reinforced concrete than in the case of steel framing, because in the former it is impossible to ascertain by inspection the strength of a floor.

No allowance is made for high-tension steel, so that apparently those systems which use mesh and other high-tension steel reinforcement would be inadmissible in buildings erected under these regulations. In the R.I.B.A. Second Report such steel is recognised, with a provision that the stress on it shall not exceed one-half the stress at the yield-point of the steel, and a maximum of 20,000 lb. per square inch.

It is also desirable to make a provision both under the regulations as to reinforced concrete and in the Act as to steel-frame buildings that the drawings and calculations should be deposited with the district surveyor some time (at least one month) *before* the work is to be commenced. In the present circumstances, as notice is only necessary two days before the work is commenced, sufficient time is not given to the district surveyor to go through the scheme and check the loads which will come on the foundations before the foreman is clamouring at the door wanting the district surveyor to pass the bottoms for the stanchions and pillars.

The regulations as to testing do not specify who is to require tests of the completed structure. Testing may be found necessary "by reason of any sign of weakness or faulty construction appearing." But the contractors' idea of "signs of faulty construction" may be very different from the district surveyor's. Who then is to decide? The New York regulations provide that:—

"The contractor may be required to make load tests on any portion of a reinforced concrete structure within a reasonable time after execution." It is also noticeable that the New York regulations require the construction "to sustain safely a load of *twice* the superimposed load for which it was designed," whereas the London County Council Regulations limit the test load to one and a half times the superimposed load for which the construction was designed.

The London County Council regulations as to protection are considerably less stringent than the New York regulations. The latter require a minimum cover of 2 in. of concrete in columns and girders, 1½ in. in walls and beams, and 1 in. in floor slabs; the former only require 1½ in. in pillars, 1 in. in beams, and ½ in. in slabs.

The allowable stresses in concrete of 1 : 2 : 4 mixture under London County Council Regulations and New York Regulations are compared below:—

	L.C.C.	New York.
	Pounds per sq. in.	
Extreme fibre stress on concrete in compression	600	650
Concrete in direct compression	600	500
Shearing stress	60	40
Adhesion stress when bars hooked at ends	100	80
Adhesion stress, bars otherwise effectively anchored	60	80

When I was asked to give a short paper on "the whole subject of the London Building Acts, including the Steel-frame Act and the Reinforced Concrete Regulations," I felt I was asked to do an impossibility. My paper is very far from dealing exhaustively with the subject and I am fully alive to its shortcomings. I can only, however, submit it for what it is worth, and trust that the discussion to follow will bring out many useful suggestions for future amendments.

The reading of the paper was succeeded by a discussion in which the following took part:—Professor Henry Adams, M.Inst.C.E., etc., President C.I.; Mr. H. D. Searles-Wood, F.R.I.B.A., Vice-President C.I.; Mr. Henry Lovegrove, F.S.I., A.R.I.B.A., District Surveyor; Mr. W. G. Perkins, District Surveyor, Member of Council C.I.; Mr. E. Fiander Etchells, Assoc.M.Inst.C.E., A.M.I.Mech.E., F.Phys.Soc., Member of Council C.I.

It was announced that the following had been elected a Member of the Institute:—Mr. Ernest Godfrey Page, A.R.I.B.A., London.

It was announced that the following had been elected an Associate-Member of the Institute:—Mr. Ernest Edmund Larkin, London.

It was announced that the following had been admitted by the Council as a student of the Institute:—Mr. Robert F. Galbraith, London.

At the sixtieth ordinary general meeting of the Institute, held on the 8th inst., discussion was continued on the paper by Mr. Hills, and Professor Henry Adams, M.Inst.C.E., President of the Institute, was in the chair.

The following took part in the discussion:—Mr. S. Bylander, Mr. E. Dru Drury (District Surveyor of St. Margaret, etc., Westminster), Mr. E. Fiander Etchells, Assoc.M.Inst.C.E., Mr. J. Ernest Franck, Mr. Lawton R. Ford (District Surveyor for St. James's, Westminster), Mr. W. A. Green, M.A., B.Sc.Eng. (St. Andrews), Mr. Percy Hunter (District Surveyor for South Lambeth), Mr. C. S. Meik, M.Inst.C.E., and Mr. Wm. Woodward.

The next meeting of the Institute will take place on April 22, at Denison House, Westminster, when Mr. F. E. Wentworth-Sheilds, M.Inst.C.E., will read a paper entitled "The Stability of Quay Walls on Earth Foundations."

BRITISH STANDARD SPECIFICATION FOR PORTLAND CEMENT.

A NEW edition of the "British Standard Specification for Portland Cement," one of the most widely adopted of the Reports issued by the Engineering Standards Committee, has just appeared. The Sectional Committee on Cement, presided over by Sir William Matthews, K.C.M.G., was formed in 1903, and the first Report was approved by the Main Engineering Standards Committee and issued in 1904. The specification has been revised from time to time with a view of improvement in the quality of the cement and the new edition just published contains further important modifications. Increased fineness of grinding of cement has been legislated for, and the minimum tensile strength at seven days of both neat cement and cement and sand has been raised. The clauses dealing with the preparation of the briquettes have been amplified, the procedure being described in greater detail than has previously been the case. In the case of both neat cement briquettes and cement and sand briquettes, ramming or hammering is expressly prohibited.

The growth of tensile strength at twenty-eight days both for neat cement and cement and sand is now given in the form of a formula, in place of the fixed percentages which have been specified hitherto. While not making any material alterations to the figures previously laid down for the growth of the tensile strength at twenty-eight days over that at seven days, the formula gives a progressive increase instead of the somewhat irregular steps of the method previously adopted, and for use in the test house lends itself to the construction of a curve from which the breaking strength at twenty-eight days corresponding to any ascertained breaking strength at seven days could readily be read off.

With the view of making easier the determination of what constitutes a visible impression in the test for final setting time the Vicat needle for this test is provided with a fixed metal circular cutting edge set half a millimetre back from the point, as this length is sufficient to clear the scum which sometimes forms on the surface of the pat. The cement is considered to be finally set when the needle makes an impression on the pat and the attachment fails to do so. The attachment is illustrated on the plate showing the Vicat needle.

All the plates have been entirely redrawn, and two new plates have been added to the specification, one dealing with a standard spatula for use in making up the cement and sand briquettes, and the other shows an improved form of specific gravity bottle which the Committee have approved as suitable for use, though they do not stipulate for its employment to the exclusion of any other pattern. Instructions for obtaining the specific gravity of cement are given on the plate.

THE BUILDING TRADE.

VOLUNTARY SERVICES BY BUILDERS' ASSOCIATIONS IN WAR-TIME.

THE Dublin Building Trades Employers' Association has set a good example of practical service to the nation, and to those who are fighting its battles, which deserves to be recorded.

When the war broke out it started a volunteer corps among the employees of the Association as non-combatants. A large number of the younger builders prepared at once to instruct in drill work; for example, Mr. H. McLaughlin worked during September and October three nights a week until he had rendered himself competent to handle a body of men.

This was by way of preparation for practical service in several directions. The chief idea which has been developed is in connection with the St. John's Ambulance Brigade; forty of the men volunteered to take out first-aid certificates, and are being instructed in the medical part by an eminent physician, in the stretcher drill by a Commander of the V.A.D., and in bandaging by an officer thereof. It is hoped shortly to have these men fully certified and able to take their places at the hospital ships as they arrive, and in moving wounded soldiers from place to place.

A request has been preferred to Lord Meath, his Majesty's Lieutenant for the County and City of Dublin, to form a Committee at the Mansion House, which will become a Volunteer Labour Bureau or Exchange, where all who wish to volunteer for any type of service may lodge their names with a description of the work they are capable of doing, and may receive information as to the work that is needed and the means of training for it.

This would enable the various organisations which exist to find out readily the men most suitable to render assistance in such work as forming stretcher parties, collecting money for the Prince's Fund, investigating cases for the Distress Committee, organising motor drives for wounded soldiers, supplying fruit, flowers, etc., to the wounded in hospitals, etc.; the idea being to systematise these various works of mercy and humanity so that there may be no needless waste of effort. The Committee could also undertake to classify speakers who could be supplied in connection with recruiting meetings.

It is hoped the idea will be given effect to, and that good results will follow. If any other Associations in the building trade are doing work of this kind their Dublin brethren will be pleased to hear about it and to exchange information and advice.

The whole affair is well conceived and does credit to the hearts and minds of the members of the Dublin building trade.

ACTIVITIES OF BUILDERS' ORGANISATIONS.

THE London Master Builders' Association numbers within its membership nearly every large general contractor in the London district. The recent dispute, which lasted over six months and affected every branch of the trade, showed conclusively the unity and strength of the organisation. What is wanted to render the Association more completely representative of the interests of the trade is the adhesion of those builders who remain still outside its ranks.

Let any such try to realise for a moment the immense advantage which would accrue individually and collectively to those engaged in the building industry, with its many branches, if the whole of them were united into a live and vigorous Association capable of furthering and defending the interests of its members against all attacks, and then let them come and do their bit also.

Builders do not generally realise that whatever their position in the trade—whether they are in a large or a small way of business, their interests are fundamentally the same.

Among the many lessons which this nation is learning in the present war is the great truth that from the highest to the lowest we all have our part to play, and every one has an importance never previously realised in the national life and in the great struggle now being waged for freedom, civilisation and the honourable observance of agreements.

It was for these very principles that the London Master Builders' Association fought the great dispute of last year; it was for those principles that the National Federation of Building Trade Employers accorded its support, and it is for the furtherance of them that every member of the building trade in the London district ought to become adherent to the employers' association of their trade.

This Association, like many others, has a large membership of merchants and manufacturers who are entitled to preferential treatment over outsiders, other things being equal.

A special feature is the provision of free preliminary legal advice as to conditions of contract and other points connected with the trade.

The adhesion of this Association to the National Scheme of Conciliation renders the scheme truly national, since all branches of the National Federation of Building Trade Employers now belong to it. Incidentally, this step has entailed the support of a considerable number of operative societies also.

THE LONDON MASTER BUILDERS' ASSOCIATION.

THE two meetings of the Council held in March were very fully attended. Reports of Committees were brought up, and that of the Finance Committee was of unusual importance, dealing as it did with the cost of the trade dispute and other extraordinary expenditure during the past year. The Budget for the present year was also discussed, and the Committee recommended that no increase be made in the rate of subscription. This recommendation was adopted by the Council and satisfaction expressed at the strength of the finances thus revealed.

Organisation.

This matter being of first importance, the Council referred it to the General Purposes Committee, which is giving all suggestions the most careful attention.

The Burden of War.

The Association has been approached from various quarters with a view to an arrangement for a conference with representatives of various trade societies in order to consider the effect of the war upon the cost of living. Every care will be taken in dealing with this matter, and while every facility will be afforded for fully discussing the subject, the fact that employers and workmen have both to bear their share of the burden will not be lost sight of.

Conciliation Board Proceedings: The United Operative Plumbers, etc., Association and Messrs. —— re Ante Time.

The plumbers claimed that time worked in advance of regulation starting should be reckoned at double time-rate as if it had been worked after 10 p.m. the preceding day. Rule IV. provides that no overtime shall be reckoned until each full day has been made. The evidence showed that the plumbers commenced work at 6.30 a.m. and finished at 9 p.m., and that the firm had paid overtime rates after the regulation hours for the day had been completed. The position of the London Master Builders' Association is that it cannot consent to the principle that any workman should commence his day's work on overtime. The dispute was referred to an Arbitrator appointed by the Board of Trade—Mr. Ernest Moon, K.C.—who heard and considered the statements and evidence put forward by both sides, and gave his award in favour of the contention of the employers.

Night Gangs.

At an adjourned meeting with the Carpenters' and Joiners' Societies the following resolution was unanimously carried: "That this Board agree that any time worked by a night gang between leaving off time on Saturday morning till starting-time on Monday night should be paid for according to the following rates: The first four hours worked on Saturday, time and a half, afterwards double time till starting-time Monday night." This decision, the Council considers, will apply to all trades.

Ticket Inspection.

The fact that the London Building Industries Federation was issuing instructions to workmen for card inspection on jobs was brought to the notice of the Council, and members cautioned to only permit inspections to take place in accordance with the rules agreed between the Societies and the Association.

Increase in Prices.

The action of certain sub-contractors in seeking to raise their prices after acceptance of tenders made prior to the outbreak of the war is receiving careful attention.

National Board of Conciliation.

As a result of a deputation to the annual meeting of this Board, the status of London under this scheme has now been satisfactorily defined, and the procedure indicated in the rules recently signed will now come into force with the following trades: Amalgamated Society of Carpenters and Joiners, General Union of Carpenters and Joiners, Operative Stonemasons' Society, Amalgamated Society of Woodcutting Machinists.

Damage by the King's Enemies.

Correspondence with H.M. Office of Works *re* above elicited, in November, an intimation that the Board "do not propose to call upon their contractors to provide for the insurance of buildings against risk of damage by the enemy," but in February a further intimation was received "that the Board are advised that, under the terms of their contracts, the liability for making good damage to buildings in course of erection caused by the King's enemies or by action taken against them, falls upon contractors." Other public bodies, however—the London County Council, for instance—have recognised the fact that risk of damage by the King's enemies was never contemplated by any contract entered into prior to August, 1914, and this has been practically admitted by the Government. It is indeed obvious that this risk is a community risk, and as such is a proper one to be borne by the public purse.

Timber Specification.

After something like three years' consideration the Science Standing Committee of the R.I.B.A. have submitted to the Council of that body their views as to what a specification should be so far as fir timber is concerned. This is receiving the careful consideration of the Institute of Builders, to whom a copy has been sent. All that need be said at present is that it is a decided improvement upon the antique specification commonly used by architects. A suggestion is, however, made to which no contractor could possibly consent, viz., that the contractor should "give to the architect a guarantee as to the time and manner of the seasoning of timber and deals for carpenter's and joiner's work, and to be entirely responsible for any defects in the building resulting from, or arising out of, any want of proper seasoning, or from dry rot, which may develop in the building within a period of six years from the time of completion."

Form of Agreement for Sub-contractors.

Much time, thought and labour have been devoted by the Institute of Builders and the National Federation of Building Trades Employers to drafting a form for sub-contracts which would have the official approval of architects. The result is disappointing, for the R.I.B.A. have written to say they consider it undesirable to authorise or agree to such form. This is much to be regretted, as the importance of an agreed form is obvious and its necessity urgent. It is suggested, however, that members should in the meantime use the form of sub-contract now issued by the Institute of Builders.

Agreed Form of Building Contract.

The necessity for amendments to the present official form of contract is being urged with great insistence, not only from London but from all parts of the country; our brethren of

* See also on page 369.

the North-Western Federation are, apparently, steadily pressing on with a form of their own devising. Nothing official has been heard from the R.I.B.A. lately, but it is understood that their Committee has made considerable progress.

London Chamber of Commerce.

The Association is now affiliated to this organisation, and Mr. F. G. Rice has been appointed representative on the Council. All members of the Association have the right to make use of the library and rooms of the Chamber and to avail themselves of the vast store of statistical and other information about all trades and all countries collected and tabulated by the Chamber.

Relief of Necessitous Belgian Builders.

The President hopes that members will respond readily to his appeal for subscriptions towards this fund, which is organised by the National Federation of Building Trades Employers and which is confined to relieving members of the Belgian Builders' Federation. There are many of these who have sought a temporary asylum here. The President feels that all will agree that these, our brothers in trade, have a peculiarly strong claim upon the more fortunately situated builders of England, and he therefore looks for a hearty response.

PROPOSED NEW BUILDINGS AND OTHER WORKS.*

In these lists care is taken to ensure the accuracy of the information given, but it may occasionally happen that, owing to building owners taking the responsibility of commencing work before plans are finally approved by the local authorities, "proposed" works, at the time of publication, have been actually commenced. Abbreviations:—T.C. for Town Council; U.D.C. for Urban District Council; R.D.C. for Rural District Council; E.C. for Education Committee; L.G.B. for Local Government Board; B.G. for Board of Guardians; L.C.C. for London County Council; B.C. for Borough Council; and P.C. for Parish Council.

ABERDEEN.—Plans passed:—Additions to premises, No. 71, College-street, for Messrs. A. Pirie & Sons, Ltd., per Messrs. Davidson & Garden, advocates; reconstruction of premises on the south side of Littlejohn-street, for the University of Aberdeen, per Mr. D. R. Thom, secretary; additions to Broadford Works, for Messrs Richards, Ltd., per Messrs. Wilsons & Walker, architects; addition in connection with drying room, on the south side of Rose-place, for Messrs. Harrott & Co., Ltd., per Mr. James R. Young, manager; refuse collecting depôt at Great Northern-road, for the T.C., per the burgh surveyor; alterations proposed to be made in connection with premises at Albert Quay, for Mr. Thomas Davidson, fishcurer, per Mr. G. Bennett Mitchell, architect.

Barnet.—Plans passed by U.D.C.:—Detached house, Friern Watch-avenue, for Mr. G. Mayo; 4-ft. culvert, Woodhouse Estate, for Messrs. Chas. Sparrow & Son.

Berwick.—The construction of a new railway station of an elaborate character is stated to be contemplated at an early date by the North British Railway Company.

Bexhill.—Plans passed:—Two detached houses in Cooden-drive, for Mr. F. Allen; detached cottage adjoining Birch Cottage, Ninfield-road, for Miss E. M. Baker.

Birmingham.—The Government estimates include £500 for preliminary expenses in connection with proposed erection of a new labour exchange, estimated to cost £35,100.

Bournemouth.—Plans passed by T.C.:—Additions, the Manchester, St. Michael's-road, Mr. and Mrs. Head; house, Lowther-road, Mr. F. Holly; alterations and additions to premises, Old Christchurch-road, Messrs. Dunsfords, Ltd.; additions to premises, Wimborne-road, the Parkstone and Bournemouth Co-operative Society; additions to motor house, No. 6, East-avenue, Mr. D. Gordon; alterations, Old Christchurch-road, Messrs. Plummer Roddis, Ltd.; verandah, Katella, Bengal-road, Mr. F. W. Collins; additions to factory, corner Malmesbury Park and Holdenhurst roads, Messrs. Aldridge & Co.; house, Southern-road, Mr. F. J. G. Cleal; additions, McWilliam-road, Mr. A. Vine; shed, Shenley, Richmond Park-avenue, Mr. C. D. Thornton; house, Montague-road, Messrs. Burridge & Bovill; motor garage, Moorland's-court, Queen's Park, Mrs. Cowood; extension to laundry, Alma-road, Mr. C. E. Hunt; additions, the Bournemouth High School for Girls, Norwich-avenue, the governors; additions, Humewood, Hamilton-road, Mr. A. D. Beynon; garage, etc., Palmerston-road, Messrs. Hendy Bros.; motor garage, The Lodge, Southbourne-road, Dr. Morton; stable, Queen's Park House, Queen's Park-drive, Messrs. Rendall & Bradford; verandah, Royal Victoria and West Hants Hospital, Poole-road, the committee; two houses, Portland-road, Mr. H. Hiscock; premises, the Square, Messrs. B. Knight & Son.

Brandon.—Plans passed by U.D.C.:—Cottage, for Messrs. Bowmer & Heward, at Park View, Langley Moor; Messrs. Cochrane & Co., Ltd., for twenty-one cottages proposed to be built at New Brancepeth Colliery.

Bromley.—Plans passed by T.C.:—Messrs. W. Smith & Sons, motor and cycle shed, Barnet Wood Cottage, Barnet Wood-road; Mr. P. Morley Horder, redrainage, Congregational Church, Widmore-road.

Chippenham.—Plans for cottage at Seagry, for Earl Cowley, are before the R.D.C.

Crompton.—Plans passed:—Additions to 13, Oak-street, for Mr. S. Lever; card shed, for the Moorfield Spinning Company; drainage plan, for the Lily Mill Company; waste shed and garage, for the Wye Mill Company, Ltd.; and refuse destructor, for the Council.

Dalkey.—Sanction has been given by the L.G.B. to the U.D.C. borrowing £10,500 for the erection of houses for the working classes.

Darwen.—Plans passed by T.C.:—Warehouse at Hollins Grove Mill, for Messrs. T. Gillibrand & Sons; shop window at 61, Greenway-street, for Mrs. Whittaker; extension to dwelling-house, 480, Blackburn-road, for Mr. James Holt; loading shed in Sough-road, for Messrs. R. S. & W. Entwistle; hospital extension to Moss Bridge House, for Mr. Gordon Shorrock; turning shop at Robert-street Foundry, for Messrs. H., J., & A. Coulthurst.

Dolgelley.—The R.D.C. have passed plans of alterations to Garthangharad Arms, Llwyngwril.

Dunfermline.—The Dean of Guild Court has granted a warrant to the Autocar Bus Company to erect a garage and offices in East-road.

Durham.—Plans passed by T.C.:—Mrs. Hodgson, for additions to house in South-street, and Mr. G. Burton, for additions to house, 30, Hallgarth-street.

Flax Bourton.—The Long Ashton B.G. have offered to sell the school buildings at the Workhouse to the Somerset C.C. for an institution for mental defectives, and the Council have resolved to engage Mr. Hine, architect, London, to prepare detailed plans and estimates of the necessary alterations and additions to the buildings.

Foleshill.—The R.D.C. have received a letter from the Public Works Loan Board agreeing to lend the Council £14,250 for housing schemes at Foleshill and Bedworth. The L.G.B. had previously stated that they could not sanction a loan at present. Plans approved:—House, Wheelwright-lane, Exhall, Mr. Dagley; house, Hurst-road, Foleshill, Mr. Davis; two houses, Bulkington-lane, Bedworth, for Mr. J. W. Johnson.

Halifax.—The Board of Education has approved the plans for the extension of the Municipal Technical College.

Haltwhistle.—Plans for eight houses at Flowers Close, for Mr. J. M. Forster, have been before the P.C.

Hebden Bridge.—Plans passed by U.D.C.:—New boiler and engine-house at Nutclough; proposed weaving shed in Victoria-road, for Messrs. Sutcliffe & Sunderland; and two houses in Old Lees-road, for Mr. W. H. Brown.

Huntingdon.—The R.D.C. have decided that the committee shall prepare plans for the building of workmen's cottages in readiness for when the L.G.B.'s prohibition of a loan is removed.

Leicester.—Included in the Government estimates is a sum of £2,000 for commencement of new sorting office, the estimated ultimate cost of which is £33,600.

London.—As part of the settlement aimed at between Messrs. Lever Bros., Ltd., and the City Corporation in regard to the acquisition of Sunlight Wharf in connection with the building of St. Paul's Bridge, Messrs. Lever undertake to erect new premises on land to be leased by the Corporation, the cost of which up to £40,000 will be borne by the municipal authority. The London Port Authority has decided to erect at the Surrey Commercial Docks for the use of the Cunard Company, sheds having an area of about 32,000 sq. ft.

Luton.—Plans passed for extension of works, for Messrs. G. Kent, Ltd., and a house in Tennyson-road, for Mr. G. W. Mardle.

Maidenhead.—Plans approved for shop, dwelling-house, and garage, for Mr. S. Evans.

Margate.—Plans passed:—Additions, Dairy Cottage, High-street, Garlinge, Mr. W. B. Wilkins; shop front, Harold-road, Mr. W. B. Wilkins; additions to depository, Athelstan-road.

Methil.—The Kirkcaldy Presbytery have passed plans for a new church at Methil to accommodate 1,000 persons.

Middlesbrough.—The Tees Conservancy Commissioners have passed a plan by Messrs. Pease & Partners for a new wharf at Cargo Fleet.

Northop (Flintshire).—A scheme is being prepared for the restoration of the ancient church tower, and a lady has subscribed £200 on condition that the work will be proceeded with as soon as possible.

Nuneaton.—It is reported that Messrs. Oram, of Leicester, contemplate erecting premises for the manufacture of dyes.

Rainham.—Plans for a cinema theatre have been passed by the Milton R.D.C.

Reading.—Plans are before the T.C. by Mr. F. E. Moody for a cinematograph theatre in London-road. The justices have approved of plans for alterations at the "Royal Exchange," Hosier-street, and the "Jolly Brewers," Tilehurst-road. Plans are also before the justices for alterations to the "Marquis of Granby," London-road. The Borough Surveyor has prepared an estimate of £3,550 for the construction of a new street from the new De Bohun Bridge to George-street.

Romford.—The U.D.C. have passed plans for a lock-up shop and warehouse in the Market-place, for Mr. A. Kistler, and for alterations at 82, Market-place, for Mr. J. H. Jervis.

Sedgefield.—Plans approved by the R.D.C. for a new farmhouse at Mainsforth, for General Surtees.

Stourbridge.—The Government estimates include £800 for extension of Stourbridge County Court, and £650 for provision of accommodation for Excise staff at the same place.

Tetbury.—Plans passed by R.D.C. for additions to a cottage at The Folly, Didmarton, belonging to the Beaufort Estate.

Thurlstone.—Plan of additions to Messrs. W. Hoyland & Co.'s umbrella frame works at Ecklands Bridge approved.

Towcester.—A sum of £845 is included in the Government estimates for the commencement of a new head post-office estimated to cost £1,950.

Wallsend.—The T.C. have approved an amended lay-out plan by Mr. E. Cratney, their architect, for sixty-eight two-roomed houses, 136 three-roomed houses, sixty-eight four-roomed houses, and fourteen self-contained houses, with a total accommodation for 286 tenants, and which gave a proportion of 18·75 houses and 37·75 tenants to the acre.

Walsgrave-on-Sowe.—Plans for alterations to the church schools have been prepared.

Waterford.—During the rebuilding of their extensive premises, which have been destroyed by fire, the T.C. are to allow Messrs. Hearne & Co. to erect a temporary shed, 216 ft. by 30 ft., on the Quay.

Whitstable.—The L.G.B. have held an inquiry into the U.D.C.'s application to borrow £300 for the purchase of a piece of land at the west end upon which to erect lavatories and a covered playground for children.

Workington.—A scheme is to be prepared by the E.C. for the erection of a school clinic and canteen centre behind the Town Hall.

GENERAL BUILDING NEWS.

OFFICES, GRACECHURCH-STREET, E.C.

Rebuilding operations are in progress at Nos. 27, 29, 29½, Gracechurch-street, E.C., the architect being Mr. L. Sylvester Sullivan, A.R.I.B.A., Fenchurch-street, E.C., and the consulting engineer Mr. Oscar Faber, B.Sc. The general contractors are Messrs. Ashby & Horner, Aldgate, E., and the steel construction is by the Aston Construction Company, Eagle Wharf-road, Hoxton, N. Messrs. Trollope & Colls, Ltd., Coleman-street, E.C., are engaged on the floor construction. Other firms connected with the new building are:—Partitions, Messrs. Frederick Jones & Co., Ltd., Perrin-street, Kentish Town, N.W.; marble-work and facings, The Art Pavements and Decorations, Ltd., Emerald-street, W.C.; sanitary engineering, fittings, lead rainwater goods, and hot-water supply, Messrs. Dent & Hellyer, Ltd., Red Lion-square, W.C.; stoves and mantels, Messrs. George Wright, Ltd., Queen Victoria-street, E.C.; lifts, Messrs. Waygood-Otis, Ltd., Falmouth-road, S.E.; lift enclosures and other ornamental ironwork, Messrs. Jones & Willis, Ltd., Great Russell-street, W.C.; asphalt, the French Asphalte Company, Ltd., Lawrence Pountney-hill, E.C.; fibrous and ornamental plaster, Messrs. Samuel Wright & Co., Ltd., Crown Works, Hackney, N.E. The sculpture and carving will be by Mr. Henry Poole, Manresa-road, Chelsea, S.W.

RESTAURANT, STRAND.

The Strand Corner House, in the Strand and Craven-street, has now been opened as a popular restaurant. The building has been erected in a little over six months. The architect was Mr. F. J. Wills, Oxford-street, W. Messrs. Dorman, Long, & Co., Middlesbrough, were the steelwork engineers.

TRADE NEWS.

The Montagu Hospital, Mexborough, is being supplied with Shorland's double-fronted patent Manchester stoves with descending smoke flues by Messrs. E. H. Shorland & Brother, Ltd., of Failsworth, Manchester.

The Metallurgical College, Cardiff, is being supplied with Shorland's patent exhaust roof ventilators by Messrs. E. H. Shorland & Brother, Ltd., of Failsworth, Manchester.

The Cherry Tree Machine Company, Ltd., are supplying the new laundry machinery (including their latest type metal rotary washing machines, with self-oiling bearings, also self-balancing type hydro extractor, with ball-bearing footstep and self-oiling bearings) to the Epileptic Colony, Langho, near Blackburn, for the Chorlton and Manchester Joint Asylum Committee.

Boyle's latest patent "air-pump" ventilators have been applied to the Wesleyan Chapel, Wisbech.

In the erection of the Bradley New Schools, the West Riding County Council, we learn, has specified the powder Pudlo for roughcasting these schools.

Messrs. Patman & Fotheringham, Ltd., building contractors and decorators, of Park-street and Liverpool-road, Islington, N., and Theobald's-road, Holborn, W.C., having erected commodious and more convenient new offices adjacent to their Park-street works, have transferred their office staff from their Liver-

* See also our list of Competitions, Contracts, etc., on page 369.

RATES OF WAGES IN THE BUILDING TRADE.

THE following are the present rates of wages in the Building Trade in the principal towns of England and Wales. It must be understood that, while every endeavour is made to ensure accuracy, we cannot be responsible for errors that *may* occur :—

——	Masons.	Bricklayers.	Carpenters, Joiners.	Plasterers.	Slaters.	Plumbers.	Painters	Masons' Labourers.	Bricklayers' Labourers.	Plasterers' Labourers.
	d.	d.	d.	d.	d.	d.	d.	d.	d.	d.
Aberdare	9	—	9½	9½	—	9	8	6½	6½	6½
Accrington	10	9½	9½	9½	9	9	9½	6½	6½	6½
Altrincham	9½	10	10½	10	8½	10	9	6½	6½	6½
Ashton-under-Lyne	10½	10½	10	10½	9	10	9	6	6	7
Barnsley	9½	9½	9½	9½	9	9	8½	7	7	7
Barrow-in-Furness..	9½	10	9½	9½	9½	9½	9½	7	7	7
Barry	9½	9½	9½	10	—	9	8½	6½	6½	6½
Bath	8½	8½	8½	8	7½	8	7½	5½	5½	5½
Bedford	8	8	8	8½	8	9	6½	5	5	5½
Birkenhead	11	11	11	11½	11	11	9½	7	7	7
Birmingham	11	11	11	10½	9½	10½	9½	8	8	8
Bishop Auckland..	9	9	9	9	10	9	7½	6	6	6½
Blackburn	10	10½	10	9½	9½	10	9½	6½	7	7
Blackpool	10½	9½	9½	9½	8½	9	8½	6	6	6
Bolton	10	10½	10	10½	10	10	9½	6–7	6–7	6–7
Bournemouth	8½	8½	8½	8½	8½	8½	8	6	6	6
Bradford	10	10	9	9½	9½	10	8½	7	7	7
Bridgwater	6½	6½	6½	6½	6½	6½	6	4	4	4
Brighton	9	8½	8½	8½	—	8	7	6	6	6
Bristol	10½	10½	10½	10½	—	10½	9½	7½	7½	7½
Burnley	10	9½	9½	9½	8	9	9½	7	7	7
Burton-on-Trent	9	9	9	9	8½	9	8½	6½	6½	6½
Bury	10½	10½	10	9	9½	10	9	6	6	6
Cambridge	9½	9	9	9½	9½	9½	7½	6	6	6
Canterbury	8½	8	8	10	—	8½–9	6½	5	5	5
Cardiff	9½	9½	9½	9½	9½	9½	8½	7	7	7
Chatham	8	9	9	9	9	9	7½	6	6	6
Chelmsford	8	7½	8½	9	—	7½	6½	5	5	6½
Cheltenham	8½	8½	8½	8½	—	8½	8	6	6	6
Chester	9½	10	9½	9½	9½	9½	8½	5½	6½-6½	5–5½
Chesterfield	9	9	9	8	9	8½	8½	5½	5½	5½
Colchester	8	8½	8½	9	8	9	6	5½	5½	5½
Coventry	10½	10½	10½	10½	9½	10½	8½	7½	7½	7½
Crewe	7	8	7½	9	8	8	7½	5	5½	6
Darlington	9½	9½	9½	10	10	9	8½	6½	6½	6½
Derby	9½	9½	9	9	9	9	8	6½	6½	7
Doncaster	9½	9½	9	9	9	9	8	6½	6½	7
Dudley	8½	8½	8½	8½	8½	8	7½	5½	5½	5½
Durham	9	9	9½	9	10	9	8½	6	6	6½
East Glamorgan and Monmouthshire Valleys	9½	9½	9½	9½	—	—	8½	6½	6½	6½
Exeter	8	8½	8	8½	7½	7½	7	5½	5½	5½
Folkestone	8½	8½	8½	9	8½	8½	7–7½	6½	6½	6½
Gloucester	8	8½	8½	8	8	8½	8	6	6	6
Grantham	8	8	7½	7½–8	7½–8	7	6½	5	5	5
Grays	—	10	10	—	—	9½	8½	7	7	7
Grimsby	9	9	9	9	9	8	8½	7	7	7
Great Yarmouth	8	8	8	—	8	8	6½	5	5	—
Halifax	10	10	9	8½	8½	9	8½	7	7	7
Harrogate	9½	9½	9	9	8	9	8½	6½	6½	6½
Hartlepools	9	10	9½	10	10	10	9	7	7	7½
Hastings	8½	8	8	8½	8	8	7	6½	5½	6½
Hereford	8	8	7½	8½	8	7	6½	5½	5½	5½
Huddersfield	10	9½	9½	9½	10	9	8½	7	7	7
Hull	10½	10	10	10	10	10	8½	7½	7½	7½
Ipswich	8½	8½	8½	9	9	8½	7	5½	5½	5½
Lancaster	10	10	9	9	9	9	9	5½	6	6
Leamington Spa	9	9	9	8½	9	9	8	6	6	6
Leeds	10	10	10	10	9	10	8	7½	7½	7½
Leicester	9½	9½	10	10½	9½	9½	9	7	7	7½
Lincoln	9	8½	8½	9	8	8½	8	6	5½	6
Liverpool	11	11	11	11	10½	11	9½	7	7	7
Llanelly	9½	9½	9½	8½	9	8½	8	5½	5½	5½
London	11½	11½	11½	11½	—	1s.	9	8	8	8
Loughborough	9	8½	8½	9	9	8½	7½	5½	5½	5½
Luton	9½	8½	8½	8½	9	8½	7½	5½	5½	5½
Maidstone	9	9	9	9	9	9	8	6	6	6
Manchester	10	10½	10½	11	10	10	9½	6½	6½	7½
Mansfield	8½	9	8½	8½	—	8½	8	6	6	—
Merthyr Tydfil	9½	9½	9½	9½	8½	9	8	6½	6½	6½
Middlesbrough	9	10	9½	10	10	10	8½	7	7	7½
Newcastle-on-Tyne.	10½	10½	10½	10½	10	10	9	7½	7½	7½
Newport, Mon.	9½	9½	9½	9½	8½	9½	8½	6½	6½	6½
Northampton	9	9	9	9	8½	9	8	6	6	6
Norwich	8	8½	8½	8½	8	8½	7	5½	5½	5½
Nottingham	10	10	10	10½	9½	10	9	7½	7½	8
Oldham	10½	10½	10½	10	9	10	9½	7	7	7½
Oxford	9½	9	9	9	8	9	8	6½	6½	6½
Plymouth	9	9	9	9	9	9	8	6½	6½	6½
Pontypridd	9½	9	9	9½	9	9	8	6½	6½	6½
Portsmouth	9½	9½	9½	9½	—	8½	7½	7	7	7
Preston	10½	10½	10	9½	9½	10	9½	5½	6	6½
Reading	8½	9	9	9½	—	9	7½	6	6	6
Rochdale	10	10½	10	10	8½	9½	9	7	7	7½
Rochester	8	9	9	9	9	8½	7½	6	6	6
Rugby	9½	9½	9½	9½	8	9½	8½	6	6	6
St. Albans	9	9	9	9–10	9	9–10	8	6½	6	6½
St. Helens	9	9½	10	9½	9½	9½	9½	6	6	6
Scarborough	8½	9	8½	8½	8	9	8	6½	6½	6½
Sheffield	10½	9½	9½	9½	9½	9½	8½	6½	6½	6½
Shrewsbury	8½	8½	8½	9½	—	8½	7	5½	5½	5½
Southampton	8½	9½	9½	8½	—	9½	8½	6½	6½	6½
Southend-on-Sea	9	9	9	9	P'cework	9	7	6	6	6
Southport	10	10	9½	9½	9½	9½	9½	6½	6½	6½
South Shields	10½	10½	10½	10½	10	8½	9	7½	7½	7½
Stockport	10½	10	10	10½	9	10	8½	6	6½–7	7½
Stockton-on-Tees	9	10	9½	10	10	10	9	7	7	7½
Stoke-on-Trent	9	9½	9	9	—	8½	8½	6	6	—
Stroud	7½	7½	7½	7½	7½	7½	7	5	5	5
Sunderland	10	10½	10	10	10	9	9	6½	6½	7
Swansea	9½	9½	9½	9½	8½	9	9	6½	6½	6½
Taunton	7	7	7	7	—	6	6½	4½	4½	4½
Torquay	8	8	8	8	8	8	8	6	6	6
Wakefield	9½	9½	9	9½	8½	9	8	7	7	7
Walsall	9½	9	9	9	8½	9	8	6½	6½	6½
Warrington	8½	9½	9½	10	8½	9½	8½	5½–6	6	6 6½
West Bromwich	10	10	9½	9½	—	9	8	7	7	7
Wigan	10	10½	9½	9½	9	9½	9½	7	7	7
Windsor	9	9	9	10	—	9	—	6	6	6
Wolverhampton	9½	9½	9½	10	8	10	8	6½	6½	6½
Worcester	8½	9	9	9	8½	9	7½	6	6	6
York	9½	9½	9	9½	9½	8½	8½	6½	6½	6½

The mason's rate given is for bankers; fixers usually ½d. per hour extra.

pool-road premises to the new offices at Park-street. The office addresses in future will be Park-street, Islington, N., and Theobald's-road, Holborn, W.C.

WAGES IN THE BUILDING TRADE.

Bangor.—In February last Mr. W. G. Williams, architect, Bangor, was appointed arbitrator to decide what was the standard rate of wages for the operative plasterers and slaters of Bangor and district. The operatives contended that 8d. was the standard rate, and the Bangor and District Building and Kindred Trades Employers' Association said that 7½d. was the standard rate, and had been from September 12, 1914. Mr. Williams, after hearing the evidence of both sides, stated that the employers were right in their contention that 7½d. per hour was the standard rate for the district for the plasterers and slaters. The carpenters and joiners of Bangor and district have received an advance in wages from 7½d. to 7½d. per hour, to date from March 1, 1915.

Blackburn.—The Operative Bricklayers' Societies have asked the Blackburn Building Trades Employers' Association to meet a deputation to discuss the question of high prices of food and other commodities.

Glossop.—The operative carpenters and joiners have sent in a three months' notice, to terminate June 3, 1915, demanding an increase in wages of 1d. per hour (9d. to 10d.).

Manchester.—Demands for war bonuses have been received in this district as follows:—Joiners, 5s. per week; woodcutting machinists, 1d. per hour; plumbers, amount not stated; painters, amount not stated; bricklayers, amount not stated; electrical wiremen, 2d. per hour; general labourers and navvies, 1d. per hour. The matter received the consideration of a special general meeting of the Manchester, Salford, and District Building Trades Employers' Association, when the following decision was arrived at:—"That whilst employers are in full sympathy with their workmen in this matter, they feel that the application, if granted, would unjustly impose hardships upon employers in consequence of the fact that they are at the present time executing contracts taken prior to and since the declaration of war, upon which no provision has been made for such contingency, and are already suffering to a considerable extent upon these contracts owing to the increased cost of materials. It is felt, therefore, that seeing the building trade is not benefiting to any large extent in consequence of the war, and seeing that recent actions on the part of the Local Government Board to withhold loans for public purposes will act detrimentally to employment in the trade, that the matter is one of national importance, and should be dealt with from a national standpoint. We suggest, therefore, that seeing the increased cost of living affects workmen throughout the country, and in consequence of the fact that employers have no means under their present contracts of reimbursing themselves for any advance so conceded, that a National Committee, representative of all trades (both employers and operatives) should endeavour to seek an interview with the Chancellor of the Exchequer or the Treasury to see if something cannot be done to relieve employers from obligations under their present contracts, or if something cannot be done by the Government to supplement the earnings of building trade employees by way of a grant to their societies."

Plymouth.—An advance in wages of ½d. per hour (6d. to 6½d.) has been granted to the labourers in this district as from April 9.

NEW COMPANIES.

THE undermentioned particulars of new companies recently registered are taken from the Daily Register compiled by Messrs. Jordan & Sons, Ltd., company registration agents, Chancery-lane, W.C.:—

WIRRAL COLLIERY (1915), LTD. (139,819), The Colliery Offices, Nestor, Cheshire. Registered March 29. To acquire the undertaking and all or any of the assets and liabilities of the Wirral Colliery Company, Ltd., in liquidation, incorporated in 1911, and to carry on business of colliery owners, miners, mechanical engineers, machine and tool makers, brick, tile, earthenware, and pottery manufacturers, etc., and to enter into an agreement. Nominal capital, £20,000 in £1 shares.

RELIANCE MANUFACTURING COMPANY, LTD. (139,844), 4, South-square, Gray's Inn, W.C. Registered March 31. Builders' merchants, manufacturers of decorators' mouldings for wall decoration, picture-frame mouldings, furniture mouldings, etc. Nominal capital, £1,000 in £1 shares.

SUMNER & Co., LTD. (139,845), 5, Seathorpe-gardens, Shaftesbury-avenue, Southend-on-Sea. Registered March 31. To acquire business of a builder and contractor now carried on by Mr. J. Sumner at above address, also the business of brick and tile terra-cotta makers. Nominal capital, £1,000 in £1 shares.

PREWETT & WETTERN, LTD. (139,830), 16, Water-lane, E.C. Registered March 30. To acquire and turn to account certain inventions for distributing granite chips, sand, salt, and other substances over roads and other surfaces. Nominal capital, £2,350 in £1 shares.

List of Competitions, Contracts, etc.

For some contracts still open, but not included in this List, see previous issues. **Those with an asterisk (*) are advertised in this number:** Competitions, — ; Contracts, iv., vi., viii. ; Public Appointments, xviii. ; Auction Sales, xx. Certain conditions beyond those given in the following information are imposed in some cases, such as: the advertisers do not bind themselves to accept the lowest or any tender; that a fair wages clause shall be observed; that no allowance will be made for tenders; and that deposits are returned on receipt of a bona-fide tender unless stated to the contrary.

The date given at the commencement of each paragraph is the latest date when the tender, or the names of those willing to submit tenders, may be sent in.

*** It must be understood that the following paragraphs are printed as news, and not as advertisements; and that while every endeavour is made to ensure accuracy, we cannot be responsible for errors that *may* occur.

Competitions.

APRIL 21.—**Whitehaven.**—HOUSING SCHEME.—The Corporation invite designs for laying-out of the Coach-road site and erection of houses thereon. The author of the design placed first may be employed as architect, or, if not, will receive a premium of 30 guineas; author of second design will receive 20 guineas, and of the third, 10 guineas. Particulars of the Borough Surveyor, Town Hall, Whitehaven. Deposit, £2 2s.

NO DATE. — **Cheshire.** — COTTAGES. — Messrs. Lever Bros. invite designs for cottages on the Bromborough Estate. Nine premiums are offered. See advertisement in issue of March 19.

NO DATE.—**Stepney.**—MUNICIPAL BUILDINGS.—The Stepney B.C. invite designs for the proposed municipal buildings. Conditions may be obtained from Mr. G. W. Clarke, Town Clerk, Municipal Offices, 15, Gt. Alie-street, Whitechapel, E.

NO DATE. — **Whitehaven.** — HOSPITAL. — The Galemire Joint Hospital Committee invite competitive designs from architects for a small hospital proposed to be erected in their district. Particulars of Mr. E. B. Croasdell, Clerk, Union Hall, Whitehaven.

Contracts.

BUILDING AND PAINTING.

The date given at the commencement of each paragraph is the latest date when the tender, or the names of those willing to submit tenders, may be sent in.

APRIL 19.—**Dublin.**—PAINTING.—For cleaning and painting three stations on Howth branch and the tea pavilion on the Hill of Howth for the Great Northern Railway Company of Ireland. Specifications of Mr. T. Morrison, Secretary, Amiens-street Terminus, Dublin. Deposit, £1 1s.

APRIL 19.—**Gelly Ystrad.**—PAINTING.—Painting the interior of electric theatre at Gelly Ystrad, Rhondda Valley, for the Gelly Pictorium Company, Ltd. Particulars of Mr. John Phillips, 9, Gelly-road, Ystrad.

APRIL 19.—**Wigan.**—PAINTING.—Painting and cleaning, etc., of the first-class plunge bath and corridors adjoining at the Public Baths, Millgate. Specification of Mr. A. T. Gooseman, Borough Engineer, King-street West, Wigan.

APRIL 20.—**Morecambe.**—SHOP, ETC.—Erection of shop and premises, Lancaster-road, Morecambe, for the Lancaster and District Co-operative Society, Ltd. Quantities of Mr. R. Jackson, architect, 32, Market-square, Lancaster.

APRIL 21. — **Bamfurlong.** — PAINTING.—Painting and decorating of four shops (Platt Bridge, Spring View, Bickershaw, and Abram) for the Bamfurlong Co-operative Society, Ltd. Specifications of the secretary.

APRIL 21.—**Dublin.**—COTTAGES.—For building ninety-one labourers' cottages, under eight contracts, and for roadmaking and other works, under one contract, for the South Dublin R.D.C. Specifications of Mr. T. J. Byrne, Clerk of the Council, 1, James's-street, Dublin.

APRIL 21.—**Leeds.**—REPAIRS.—The E.C. invite tenders for repairs to buildings and furniture for the period ending September 30, 1915, in separate trades, as follows:—Bricklayer and mason, carpenter and joiner, plumber, slater, plasterer, smith and founder, heating engineer, concreter, painter. Forms of tender at the Architect's Section, Education Offices, Leeds.

APRIL 21.—**Tonypandy.**—BUSINESS PREMISES.—Erection of large block of business premises at Dunraven-street, Tonypandy, for Mrs. A. Davies. Quantities of Mr. J. T. Jenkins, architect, Porth, Rhondda, Glamorganshire. Deposit, £2 2s.

APRIL 22. — **Leeds.**—ALTERATIONS.—Alterations to the Central Lending Library, Leeds, including the provision of new bookcases and alterations to the existing bookcases and counters Quantities of Mr. W. T. Lancashire, City Engineer, Municipal Buildings, Leeds.

APRIL 22. — **Wilkinstown.** — ADDITIONS.—For additions to station buildings at Wilkinstown Station for the Midland Great Western Railway of Ireland. Specification of Mr. Wm. Purcell O'Neill, Chief Engineer of the Company, Broadstone Terminus, Dublin. Charge, 2s. 6d.

APRIL 27.—**Isleworth.**—PAINTING, ETC.—Cleaning, painting, and distempering at the Union Infirmary, Isleworth. Specification of Mr. F. E. Harmsworth, Deputy-Clerk, Union Offices, Isleworth, Middlesex.

APRIL 28. — **Blackwood.**—PREMISES.—Erection of new premises at Oakdale Village, near Blackwood, Mon., for Messrs. the Tredegar Industrial and Provident Society, Ltd. Quantities of Mr. A. F. Webb, architect, Tredegar-chambers, Blackwood, Mon. Deposit, £2 2s.

APRIL 30.—**Linthwaite.**—HOUSES.—Erection of twenty-four dwelling-houses in five separate blocks at Cowlersley, Milnsbridge, for the Linthwaite U.D.C. Quantities of the architect, Mr. Joe Ainley, Chapel-street, Slaithwaite.

APRIL 30.—**Shrewsbury.**—PAINTING.—Painting the master's cottage at the Workhouse, Cross Houses. Specification of the Master, Mr. W. G. Fulcher, The Workhouse, Cross Houses, Shrewsbury.

MAY 1. — **Caherciveen.**—BRIDGE.—Rebuilding of Caherciveen Bridge, Co. Kerry, for the C.C. of Kerry. The new bridge is to be built in ferro-concrete on Messrs. Delap & Waller's system. Specification at Messrs. Delap & Waller's offices, 115, Grafton-street, Dublin.

MAY 1.—**Dundee.**—PUMP CHAMBER.—Construction of a reinforced concrete pump chamber at the Eastern Wharf, Carolina Port, Dundee. Specification of Mr. H. Richardson, Engineer, Electricity Department, Dundee.

MAY 3.—**Belfast.**—BRIDGE.—Construction of an overline bridge and approaches at Finaghy, near Belfast, for the Great Northern Railway Company (Ireland). Quantities of Mr. T. Morrison, Secretary, Amiens-street Terminus, Dublin. Deposit, £2 2s.

* MAY 6.—**Sutton-in-Ashfield.**—POST OFFICE.—The Sutton-in-Ashfield U.D.C. invite tenders for erection of a post office.

* MAY 10.—**London.**—FOUNDATIONS AND CONCRETE WALL.—The Commissioners of H.M. Works invite tenders for foundations and concrete retaining wall at new G.P.O. East.

MAY 12. — **Fareham.** — ALTERATIONS, ETC. — Alterations and additions to the school buildings, Fareham, Hants, for the Governors of Price's School. Quantities of the architect, Mr. Wilberforce Cobbett, West-street, Fareham. Deposit, £2 2s.

MAY 15.—**Morocco.**—SHED.—Construction of shed at the Custom House, Laraiche, for the Special Committee of Public Works. Estimated value of contract £1,293. Copy of particulars at the Commercial Intelligence Branch of the Board of Trade, 73, Basinghall-street, E.C.

NO DATE.—**Bingley.**—SHED.—Bricklayer's and joiner's work required in the erection of a small shed at the Bowling Green Mills. Names to Messrs. Nunns & Bracewell, architects, Bankchambers, Bingley.

NO DATE.—**Carlisle.**—BAKERY.—Extensions to bakery at Junction-street for the Carlisle Co-operative Society. Quantities of Mr. S. W. B. Jack, architect, 19, Lowther-street, Carlisle.

NO DATE. — **Halifax.** — HOUSES.—Erection of dwelling-house at West Vale. Names and addresses to Messrs. Medley Hall & Son, architects, 1, Harrison-road, Halifax.

NO DATE. — **Kingsbridge.** — FARMHOUSE. — Building a new farmhouse at Higher Harlestone, Frogmore, near Kingsbridge. Specifications from the owner, Mr. W. R. Paige, 10, Severn-road, Sheffield. Deposit, 5s.

NO DATE.—**Plymstock.**—ADDITION.—Addition of bathroom wing to Park Cottage, Plymstock. Quantities of Mr. Edward W. Lister, L.R.I.B.A., Clock Tower-chambers, 27, George-street, Plymouth.

NO DATE.—**Threshfield.**—HOUSES.—Erection of four houses at Threshfield for Mr. Delaney. Quantities of Mr. J. W. Broughton, architect, Skipton.

FURNITURE, MATERIALS, etc.

APRIL 19. — **Bradfield.** — ROAD MATERIALS.—Supply of flints and gravel to the Bradfield R.D.C. Mr. Bernard A. Collins, Clerk, 172, Friar-street, Reading.

APRIL 19.—**Glasgow.**—MATERIALS.—Supply to the Corporation Sewage Department of lime, cement, ironmongery, bolts and nuts, iron castings, oils and paints, timber, bricks, etc. Forms of tender of Mr. Thomas Melvin, General Manager, 72, Ingram-street

APRIL 19. — **Normanton.**—MATERIALS.—Supply to the Normanton U.D.C. of stone and concrete flags, kerbs, channels, setts, granite, limestone, whinstone, limestone and granite chippings, and tar macadam. Form of tender from Mr. John W. Martin, Clerk, Council Offices, Normanton.

APRIL 19.—**Reigate.**—MATERIALS.—Supply to the Corporation of granite macadam, basalt and flints, granite kerb, Kent ragstone, tarpaving, artificial stone paving, gravel, concrete beach, Portland cement, etc. Forms of tender of Mr. Fred T. Clayton, Borough Surveyor, Municipal Buildings, Reigate.

APRIL 21.—**Armagh.**—MATERIALS.—Supply of cement, oils, tools, pipes, bricks, and other materials to the U.D.C. Forms of tender of Mr. J. Lennon, Town Clerk, Armagh.

APRIL 21.—**Glasgow.**—MATERIALS.—Supply to the Corporation Baths Department of plumbers' furnishings, brass furnishings, paints and varnish, joiner work, etc. Forms of tender of Mr. William Thomson, General Manager, 38, College-street, Glasgow.

APRIL 21.—**Melbourne.**—ARC LAMP CARBONS.—Supply to the City of Melbourne of 1,027,900 arc lamp carbons. Tender form, etc., of Messrs. McIlwraith, McEacharn, & Co., Ppty., Ltd., Billiter-square-buildings, London, E.C. Deposit, 5s.

APRIL 21.—**Middlewich.**—MATERIALS, ETC.—Supply to the Middlewich U.D.C. of road materials; also for paving. Forms of tender of the Council's Surveyor, Town Hall, Middlewich.

APRIL 24.—**Glasgow.**—MATERIALS.—Supply to the Corporation Parks Department of (1) whin metal and causewaying; (2) coal and dross; (3) fireclay and field drain pipes; (4) paint, oils, etc.; (5) timber; (6) glass; (7) mason work. Form of offer of Mr. James Whitton, Superintendent of Parks, City-chambers, 249, George-street.

APRIL 24.—**Glasgow.**—MATERIALS.—Supply to the Corporation Hospitals Department of plumber, engineer, and joiner materials. Forms of specifications from the House Steward at the Hospital, Belvidere, London-road.

APRIL 24.—**Manchester.**—LOCKERS.—Supply of 100 hospital lockers to the Crescent-road Institution Infirmary, Crumpsall, Manchester, for the B.G. Forms of tender at the Poor Law Offices, New Bridge-street, Manchester.

APRIL 26.—**Hyde.**—MATERIALS.—Supply to the Corporation of sanitary pipes, brushes, hardware, oils, limestone chippings, iron pipes and specials, etc Forms of tender of the Borough Surveyor, Town Hall, Hyde.

APRIL 27.—**Southport.**—MATERIALS.—Supply to the Corporation of road, sewer, paving, and other materials. Forms of tender of Mr. A. E. Jackson, A.M.I.C.E., Borough Engineer, Town Hall, Southport.

APRIL 28.—**Leeds.**—FLAGS, ETC.—Supply to the Sub-Park (Cemeteries) Committee of gravestones and flags. Forms of tender of Mr. W. T. Lancashire, City Engineer, Municipal Buildings, Leeds.

MAY 3.—**Oswestry.**—MATERIALS.—Supply to the Cambrian Railways Company of stores and materials. Forms of tender at the Stores Office, Cambrian Works, Oswestry.

MAY 15. — **Egypt.** — POST OFFICE STORES.—Supply to the Postmaster-General, Alexandria, of various stores, including letter-boxes and accessories, lamps and electric fans, enamelled plates, rolling stock, safes, strong cupboards, safety locks, etc. Copy of specification at the Commercial Intelligence Branch of the Board of Trade, 73, Basinghall-street, E.C.

ENGINEERING, IRON, AND STEEL.

APRIL 19.—**Basingstoke.**—ELECTRICITY PLANT.—Supply to the Corporation of (*a*) one Diesel engine generating set; (*b*) one motor generator balancer; (*c*) underground cables. Specification of Mr. George Broadhurst, Electrical Engineer, Electricity Works, Brook-street, Basingstoke. Deposit, £1 1s.

[Those with an asterisk (*) are advertised in this issue.]

ENGINEERING, etc.—*continued.*

The date given at the commencement of each paragraph is the latest date when the tender, or the names of those willing to submit tenders, may be sent in.

APRIL 19. — **Rutherglen.** — STEELWORK. — Strengthening of bridge over Cambuslang-road, Rutherglen, for the Caledonian Railway Company. Schedule of the Company's Engineer, 302, Buchanan-street, Glasgow. Deposit, £2 2s.

APRIL 20.—**Manchester.**—RAILS.—Supply of steel girder tramway rails and fishplates for the Manchester Corporation. Specifications of Mr. J. M. McElroy, General Manager, Corporation Tramways, 55, Piccadilly, Manchester. Deposit, £1 1s.

APRIL 21. — **Burma.** — RAILWAY MATERIAL. — Supply to the Burma Railways Company, Ltd., of (*a*) 304 tyres for engines and tenders; (*b*) 2,500 steel boiler tubes; (*c*) 1,250 helical springs; (*d*) 750 tyres for carriages and wagons. Specifications of Mr. W Home, Managing Director, 199, Gresham House, Old Broad-street, London. Charge, 10s. for first three specifications and £1 for the fourth.

APRIL 21. — **Dartford.** — EXPANSION LOOPS.— Providing and fixing expansion loops on steam mains at the Joyce Green Hospital, near Dartford, Kent, for the Metropolitan Asylums Board. Specification at the office of the Board, Embankment, E.C. Deposit, £1.

APRIL 22.—**India.**—MATERIALS.—Supply to the Great Indian Peninsula Railway Company of various stores. Specifications of Mr. R. H. Walpole, Secretary, 48, Copthall-avenue, E.C., London. Charge for specifications, amount not stated.

APRIL 23.—**Maybole.**—RETORTS.—Erection of a bench of sixteen retorts with the usual appurtenances, including a new foul main for the Maybole Gas Light Company, Ltd. Specifications at the Gas Works.

APRIL 24.—**Guernsey.**—TOWER.—Erection of a concrete tower upon the "Roustel" Rock, in the Little Russel Passage, on the eastern side of the Island of Guernsey, for the St. Peter Port Harbour Committee. Specification of Mr. J. H. Duquemin, States Engineer, States Office, Guernsey.

APRIL 24.—**Leeds.**—PIPES.—Supply to the Gas Committee of cast-iron pipes and retort castings. Forms of tender of Mr. W. B. Leech, General Manager, Gas Offices, Market Hall, Leeds.

APRIL 26.—**Mountain Ash.**—ELECTRIC SUPPLY. —For the following works in connection with the electric supply to the township of Abercynon for the Mountain Ash U.D.C.:—(1) Sub-station building; (2) E.H.T. underground cables, low-tension overhead lines, and public lighting; (3) E.H.T. switchgear, low-tension switchgear, and transformers. Specification of the Consulting Engineer, Mr. Hugh H. McLeod, Portishead, near Bristol, or of the Surveyor, Mr. W. G. Thomas, Town Hall, Mountain Ash, Glam. Deposit, £1 1s.

APRIL 27.—**India.**—RAILWAY MATERIAL.—Supply to the Madras and Southern Mahratta Railway Company, Ltd., of (1) steel material (angles, channels, plates); (2) carriage underframes and fittings. Specifications of the Secretary, 91, York-street, Westminster, S.W. Charge, £1 each specification.

APRIL 28.—**Dundee.**—PUMPS, ETC.—Supply and erection of centrifugal circulating pumps and supply and laying of about 750 ft. of 42-in. and 30-in. cast-iron pipes. Specification of Mr. H. Richardson, M.Inst.E.E., General Manager, Electricity Department, Dundee.

APRIL 28. — **Newlyn.**—HARBOUR WALL.—Construction of a reinforced concrete face wall to part of the existing North Pier, Newlyn Harbour, Cornwall, for the Newlyn Pier and Harbour Commissioners. Specification of Messrs. Douglass, Lewis, & Douglass, Engineers, 15, Victoria-street, Westminster, London, S.W. Deposit, £1.

MAY 19. — **Australia.**—RAILWAY MATERIAL.— Supply to the Victorian Railway Commissioners of (1) 120 single-phase track transformers and such further orders as may be required during five years; (2) 300 electric signals and spare parts and such further orders as may be required for five years. Copies of specifications at the Commercial Intelligence Branch of the Board of Trade, 73, Basinghall-street, E.C.

JUNE 2. — **Australia.**—LIGHTING.—The period for the receipt of tenders for the supply of (1) material for railway-car lighting and (2) electric-lighting material for car-repair shops for the Victorian Railway Commissioners has been extended to June 2. Copy of specification at the Commercial Intelligence Branch of the Board of Trade, 73, Basinghall-street, E.C.

JUNE 2. — **Australia.** — RAILWAY MATERIAL.— Supply to the Victorian Railway Commissioners of (*a*) 300 electric train stops and such further orders as may be required for five years; (*b*) bogie trucks, wheels, and axles for ten cars for the St. Kilda-Brighton Electric Street Railway. Copies of specifications at the Commercial Intelligence Branch of the Board of Trade, 73, Basinghall-street, E.C.

JUNE 15.—**Australia.**—VARIOUS.—Supply of following to the Melbourne City Council:—(*a*) Four boilers of water tube type; (*b*) eighteen coal-weighing machines; (*c*) two fuel economisers; (*d*) turbine-driven feed water pipe; (*e*) two circulating water pumping sets. Specifications of Messrs. McIlwraith, McEacharn, & Co., Billiter-square-buildings, London, E.C. Deposit, 5s. in respect of each specification.

ROAD, SANITARY, AND WATER WORKS.

APRIL 19.—**Chesterfield.**—WATERWORKS.—Laying and jointing of 2,234 yds. of 4-in. main cast-iron water mains in the parish of Heath for the Chesterfield R.D.C. Specification of the Waterworks Engineer, Mr. Gilbert Frith, Rural District Council Offices, Chesterfield. Deposit, £1 1s.

APRIL 20.—**Oystermouth.**—SEWER.—Construction of about 500 yds. of stoneware pipe sewer, varying from 9 in. to 4 in. in diameter, for the U.D.C. Quantities of Mr. W. P. Puddicombe, Surveyor, Council Offices, Oystermouth.

APRIL 23. — **Tetbury.** — BOREHOLE. — Sinking borehole, etc., for the Tetbury U.D.C. Specification of Mr. H. J. Weaver, Engineer, Northgate-mansions, Gloucester. Deposit, £2 2s.

APRIL 24.—**Mirfield.**—STREET WORKS.—Making-up North-street and South-street for the U.D.C. Quantities of Mr. E. Gill, Surveyor, Council Offices, Mirfield. Deposit 10s. 6d.

APRIL 24. — **Sowerby Bridge.** — PAVING.— Paving about 2,500 yds. of 6-in. setts, and for other work in connection with Mearclough-road improvement for the Sowerby Bridge U.D.C. Specifications of Mr. James Eastwood, Surveyor, Council Offices, Sowerby Bridge.

APRIL 24. — **Sowerby Bridge.** — ROADS.—(*a*) Supplying 6-in. Yorkshire setts; (*b*) executing the various works required in making-up street at the rear of Gladstone-buildings and Cavendish-buildings, Sowerby New-road, for the Sowerby Bridge U.D.C. Specifications of Mr. James Eastwood, Surveyor, Council Offices, Sowerby Bridge.

APRIL 26. — **Warmley.** — STREET WORKS.— Making-up of Portland-road (formerly known as Factory-road), Soundwell, in the parish of Mangotsfield, for the Warmley R.D.C. Particulars of Mr. Henry M. Bennett, Surveyor, 36, Corn-street, Bristol.

APRIL 27.—**Bucklow.**—CULVERT.—Construction of a concrete tube culvert, 42 in. diameter, at Booth Bank-road, Millington, for the Bucklow R.D.C. Particulars of Mr R. Curtis Cordon, Highway Surveyor, Cranford-avenue, Knutsford.

APRIL 30. — **Dunfermline.** — WATERWORKS.— Supplying and laying about one mile of cast-iron pipes, 15-in. diameter, together with the construction of incidental and relative works, for the Dunfermline Corporation Waterworks. Quantities of the Engineers, Messrs. Crouch, Hogg, & Easton, C.E., 14, Blythswood-square, Glasgow. Deposit, £1 1s.

MAY 7.—**Staines.**—WATERWORKS.—Construction of syphon chambers, conduits, and other contingent works at Staines for the Metropolitan Water Board. Specification at the offices of the Board (Chief Engineer's Department), Savoy-court, Strand, W.C. Deposit, £10.

Auction Sales.

* APRIL 20.—**New Barnet.**—Mr. H. W. Smith will sell by auction, on the premises, the machinery and plant of a saw mill proprietor, timber merchant, etc.

* APRIL 23.—**Edgware.**—Mr. H. W. Smith will sell by auction, at the depôt, the stock and effects of a builders' merchant.

* APRIL 28. — Messrs. Churchill & Sim will sell by auction, at the Great Hall, Winchester House, Old Broad-street, E.C., an assortment of deals, battens, boards, timbers, etc.

[Those with an asterisk (*) are advertised in this issue.]

CORONERS' COURTS.

IN view of the public importance of the duties of our coroners, it is hardly creditable to local authorities that the work over which these officers preside should frequently have to be carried out in makeshift surroundings, not only inconvenient, but often so unsuitable as to involve a reduction of efficiency in results and even positive danger.

The great desirability of conducting inquests in buildings properly designed for the purpose is even now not fully realised outside the circle of those whose duties involve personal participation in the work; and the study of the special features which ought to be embodied in coroners' courts, and especially in the mortuaries and subordinate buildings attached to the courts, has not received even yet adequate attention. Probably no architect would now suggest the provision of pigeon holes to receive dead bodies awaiting post-mortem examination, as was done (in the winning design) in a competition not yet two decades ago, but this was merely one of the more obvious errors of the past.

The Corporation of Southwark have recently provided a well-equipped Court, and at the opening the coroner made some interesting statements concerning, and comments upon, past and present methods. Dr. F. J. Waldo is Coroner not only for Southwark, but also for the City of London, and it has fallen within our province to refer from time to time somewhat particularly to one branch of his work—that of conducting inquiries as to fires within the city. On the present occasion, as so often at his fire inquests, Dr. Waldo's remarks drew attention to many points of public interest and importance, points that may usefully be kept in view by those contemplating the erection of buildings such as are now referred to.

He spoke of the difficulties experienced by provincial coroners in conducting inquests in bar parlours of public-houses, with the inconvenience of jurymen having to view bodies in cottages and private houses, and the dangers of autopsies carried out in any stable, shed, or barn that might be available. Even in London, when Dr. Waldo was first appointed, juries had to consider their verdicts in dark underground rooms which formed part of a charnel house filled with bodies in bricked-up recesses. It was only after much trouble that the Coroner secured the disused Southwark Police Court, in the Borough High-street, as a substitute. This building gave reasonable accommodation for the hearing, but was at a considerable distance from the mortuary, the necessary visits to which by the juries involved much loss of time. Dr. Waldo is to be congratulated upon the fact that his continued efforts have resulted in the production of the Court just opened, the equipment of which will doubtless set a standard for some time to come. A feature of the new mortuary is one of Herscher's formalin preserving chambers, in which corpses may be preserved for almost any length of time. The first chamber of this kind in the country was constructed for Dr. Waldo at his city Court in 1909, and up to the present there are no others in England. The possibility of thus arresting decay has obviously great advantages; it enables bodies to be kept for months for identification, it reduces the unpleasantness of the duties of the jurymen, it is a safeguard in cases of infectious disease, and last, but not least, it reduces to some extent the frequently horrible work thrown upon the mortuary keepers.

Dr. Waldo, in urging the provision of courts and mortuaries, not only in the metropolis, but also at convenient centres in the provinces, pointed out that the provision of proper post-mortem rooms would lead to a greater number of autopsies being made, and the pathologists, under such fair conditions, would be able to make more thorough examinations. All this would lead to less being heard of exhumations and of delayed murder trials conducted with some of the best evidence gone.

PATENTS.

APPLICATIONS PUBLISHED.*

26,916 of 1913.—Antime Motteau: Sash windows.

27,950 of 1913.—William John Dunn and Henry Burns Taylor: Wallpaper pasting and trimming apparatus.

1,184 of 1914.—George Hutchinson: Fence-posts, droppers, and struts.

2,708 of 1914.—Joseph Harnett and Richard Louveteau Glasspool: Systems for heating by the circulation of hot water.

7,087 of 1914.—British Patent Surbrite Company, Ltd., and Ernest George Meadway: Manufacture of metallic paint.

7,109 of 1914.—George Senseney: Joining of wood.

7,639 of 1914.—John Shackle Harber: Haulage gear for travelling cradles or staging.

9,438 of 1914.—William Frank White: Cowl and ventilator.

10,639 of 1914.—Cuthbert Miller Burnett: Ferro-concrete construction of buildings or the like.

14,306 of 1914.—Benjamin Millward and William Morrall: Hoists, pulley blocks, winches, and the like.

16,514 of 1914.—Francis Joseph James Gibbons: Casement stays.

* All these applications are in the stage in which opposition to the grant of Patents upon them can be made.

PRICES CURRENT OF MATERIALS.

[Owing to the exceptional circumstances which prevail at the present time, prices of materials should be confirmed by inquiry.]

Since our last issue many alterations have been made in the prices quoted for metals, lead, etc., glass, and oils.

*** Our aim in this list is to give, as far as possible, the *average* prices of materials, not necessarily the highest or lowest. Quality and quantity obviously affect prices—a fact which should be remembered by those who make use of this information.

BRICKS, &c.

Per 1000 Alongside, in River.	£ s. d.
Best Stocks	1 18 0
Picked Stocks for Facings	2 12 0

Per 1000, Delivered at Railway Depôt.

	£ s. d.		£ s. d.
Flettons	1 14 0	Best Blue Pressed Staffordshire	3 15 0
Best Fareham Red	3 12 0	Do. Bullnose	4 0 0
Best Red Pressed Ruabon Facing	5 0 0	Best Stourbridge Fire Bricks	4 0 0

GLAZED BRICKS—

Best White, Ivory, and Salt Glazed Stretchers	13 0 0	Double Headers	15 10 0
Headers	12 10 0	One Side and two Ends	19 10 0
Quoins, Bullnose and 4½ in. Flats	16 10 0	Two Sides and one End	20 10 0
D'ble Str'tch'rs	18 10 0	Splays and Squints	18 0 0

Second Quality £1 10s. per 1000 less than best.

	s. d.	
Thames and Pit Sand	7 6	per yard, delivered.
Thames Ballast	6 0	„ „ „
Best Portland Cement	38 0	per ton, „
Best Ground Blue Lias Lime	21 0	„ „

NOTE.—The cement or lime is exclusive of the ordinary charge for sacks.

Grey Stone Lime ..... 15s. 6d. per yard delivered.
Stourbridge Fireclay in sacks 35s. 0d. per ton at rly dpt.

STONE.

Per Ft. Cube.

	s. d.
BATH STONE—delivered on road waggons, Paddington Depôt	1 7½
Do. do. delivered on road waggons, Nine Elms Depôt	1 9½

PORTLAND STONE (20 ft. average)—

Brown Whitbed, delivered on road waggons, Paddington Depôt, Nine Elms Depôt, or Pimlico Wharf	2 4½
White Basebed, delivered on road waggons, Paddington Depôt, Nine Elms Depôt, or Pimlico Wharf	2 6½

Per Ft. Cube, delivered at Railway Depôt.

	s. d.		s. d.
Ancaster in blocks	1 10	Closeburn Red Freestone	2 0
Beer in blocks	1 6	Red Mansfield Freestone	2 4
Greenshill in blocks	1 10	Talacre & Gwespyr Stone	2 4
Darley Dale in blocks	2 4		
Red Corsehill in blocks	2 3		

YORK STONE—*Robin Hood Quality.*

Per Ft. Cube, Delivered at Railway Depôt.	s. d.
Scappled random blocks	2 10

Per Ft. Super., Delivered at Railway Depôt.

6 in. sawn two sides landings to sizes (under 40 ft. super.)	2 8
6 in. rubbed two sides ditto, ditto	2 6
3 in. sawn two sides slabs (random sizes)	0 11½
2 in. to 2½ in. sawn one side slabs (random sizes)	0 7
1½ in. to 2 in. ditto, ditto	0 6

HARD YORK—

Per Ft. Cube, Delivered at Railway Depôt.	
Scappled random blocks	3 0

Per Ft. Super., Delivered at Railway Depôt.

6 in. sawn two sides landing to sizes (under 40 ft. super.)	2 8
6 in. rubbed two sides ditto	3 0
2 in. sawn two sides slabs (random sizes)	1 2
8 in. self-faced random flags	0 5

SLATES.

Per 1000 of 1200 at Railway Depôt.

In. In.	£ s. d.	In. In.	£ s. d.
20 × 10 best blue Bangor	13 5 6	20 × 12 ditto	14 5 0
20 × 12 ditto	14 7 6	16 × 8 ditto	7 0 0
20 × 10 1st q'lity ditto	13 0 0	22 × 10 best blue Portmadoc	12 12 6
		16 × 8 ditto	6 10 6

TILES.

At Railway Depôt.

	s. d.		s. d.
Best plain red roofing (per 1000)	42 0	Best "Hartshill" brand, plain sand-faced (per 1000)	45 0
Hip and Valley (per doz.)	3 7	Do. pressed (per 1000)	42 6
Best Broseley (per 1000)	50 0	Do. Ornamental (per 1000)	47 6
Do. Ornamental (per 1000)	52 6	Hip (per doz.)	4 0
Hip and Valley (per doz.)	4 0	Valley (per doz)	3 6
Best Ruabon red, brown, or brindle (Edw'ds) (pr1000)	57	Staffords. (Hanley) Reds or Brindled (per 1000)	42 6
Do. Ornamental (per 1000)	60 0	Hand-made sand-faced (per1000)	45 0
Hip (per doz.)	4 0	Hip (per doz.)	4 0
Valley (perdoz.)	3 6	Valley (perdoz.)	3 6

WOOD.

BUILDING WOOD.	At per standard. £ s. d.		£ s. d.
Deals: best 3 in. by 11 in. and 4 in. by 9 in. and 11 in.	21 10 0	..	22 0 0
Deals: best 3 in. by 9 in.	21 0 0	..	22 0 0
2 in. by 11 in.	23 0 0	..	23 10 0
Battens: best 2½ in. by 7 in. and 8 in., and 3 in. by 7 in. and 8 in.	19 0 0	..	20 0 0
Battens: best 2½ in. by 6 in. and 3 in. by 6 in.	0 10 0		less than 7 in. and 8 in.
2 in. by 7 in.	20 0 0	..	—
3 in. by 4 in.	21 0 0	..	—
2 in. by 4½ in.	22 10 0	..	—
3 in. by 4½ in.	21 10 0	..	—
Deals: seconds	1 0 0		less than best
Battens: seconds	0 10 0		„ „
2 in. by 4 in. and 2 in. by 6 in.	17 10 0	..	19 0 0
2 in. by 4½ in. and 2 in. by 5 in.	15 0 0	..	16 10 0
Foreign Sawn Boards—1 in. and 1¼ in. by 7 in.	0 10 0		more than battens.
¾ in.	1 0 0		„
Fir timber: best middling	At per load of 50 ft.		
Memel (average specification)	6 15 0	..	7 15 0
Seconds	6 0 0	..	6 10 0
Small timber (8 in. to 10 in.)	5 5 0	..	5 10 0
Small timber (6 in. to 8 in.)	4 10 0	..	5 0 6
Swedish balks	4 0 0	..	4 10 0
Pitch-pine timber (30 ft. average)	8 5 0	..	9 0 0

JOINERS' WOOD.	At per standard.		
White Sea: first yellow deals, 3 in. by 11 in.	33 15 0	..	35 0 0
Battens, 2½ in. and 3 in. by 7 in.	23 7 6	..	24 7 6
Second yellow deals, 3 in. by 11 in.	27 5 0	..	28 5 0
Do. 3 in. by 9 in.	25 5 0	..	26 5 0
Battens, 2½ in. and 3 in. by 7 in.	20 0 0	..	21 0 0
Third yellow deals, 3 in. by 11 in. and 9 in.	20 2 6	..	21 2 6
Battens, 2½ in. and 3 in. by 7 in.	19 0 0	..	20 0 0
Petersburg: first yellow deals, 3 in. by 11 in.	29 10 0	..	31 0 0
Do. 3 in. by 9 in.	25 5 0	..	26 5 0
Battens	19 5 0	..	20 5 0
Second yellow deals, 3 in. by 11 in.	21 10 0	..	23 0 0
Do. 3 in. by 9 in.	20 5 0	..	21 10 0
Battens	19 0 0	..	20 0 0
Third yellow deals, 3 in. by 11 in. / Do. 3 in. by 9 in.	19 10 0	..	—
Battens	18 10 0	..	19 0 0
White Sea and Petersburg—First white deals, 3 in. by 11 in.	22 10 0	..	24 0 0
First white deals, 3 in. by 9 in.	21 0 0	..	22 10 0
Battens	18 0 0	..	19 0 0
Second white deals, 3 in. by 11 in.	20 0 0	..	21 0 0
Second white deals, 3 in. by 9 in.	19 0 0	..	20 0 0
Battens	17 10 0	..	18 10 0
Pitch-pine deals	34 0 0	..	35 0 0
Under 2 in. thick extra	0 10 0	..	1 0 0
Columbian or Oregon Pine, best quality	28 0 0	..	29 0 0
Yellow Pine—First, regular sizes	57 0 0		upwards.
Oddments	39 0 0		„
Seconds, regular sizes	43 10 0		„
Oddments	37 0 0		„
Kauri Pine—Planks per ft. cube	0 7 6	..	—
Oak Logs—Large, per ft. cube	0 5 6	..	0 6 6
Small „ „	0 4 6	..	0 5 5
Wainscot Oak Logs, per ft. cub	0 10 6	..	0 12 6
Dry Wainscot Oak, per ft. super, as inch	0 1 0	..	0 1 3
¾ in. do. do.	0 0 10	..	0 1 0
Dry Mahogany—Honduras, Tabasco, per ft. super, as inch	0 1 0	..	0 1 4
Selected, Figury, per ft. super, as inch	0 1 6	..	0 2 6
Cuba Mahogany	0 1 6	..	0 2 6
Dry Walnut, American, per ft. super, as inch	0 1 0		upwards. .. 0 1 3
French, "Italian." Walnut	0 1 0	..	0 1 6
Teak, per load (Rangoon or Moulmein)	28 0 0	..	34 0 0
Do., do. (Java)	24 0 0	..	27 0 0
American Whitewood planks, per ft. cube	0 6 6	..	0 7 6

Prepared flooring, etc.—	Per square.		
1 in. by 7 in. yellow, planed and shot	0 18 0	..	1 0 0
1 in. by 7 in. yellow, planed and matched	0 18 0	..	1 0 0
1¼ in. by 7 in. yellow, planed and matched	1 2 0	..	1 5 0
1 in. by 7 in. white, planed and shot	0 17 6	..	1 0 0
1 in. by 7 in. white, planed and matched	0 18 0	..	1 0 0
1¼ in. by 7 in. white, planed and matched	1 2 0	..	1 5 0
¾ in. by 7 in. yellow, matched and beaded or V-jointed boards	0 14 6	..	0 16 6
1 in. by 7 in. „ „	0 18 6	..	1 1 0
¾ in. by 7 in. white „ „	0 14 6	..	0 16 6
1 in. by 7 in. „ „	0 18 6	..	1 1 0

6 in. at 6d. to 9d. per square less than 7 in.

JOISTS, GIRDERS, &c.

	In London or delivered Railway Vans, per ton. £ s. d.		£ s. d.
Rolled Steel Joists, ordinary sections	9 10 0	..	10 10 0
Compound Girders, ordinary sections	12 0 0	..	13 0 0
Steel Compound Stanchions	13 0 0	..	15 0 0
Angles, Tees, and Channels, ordinary sections	12 0 0	..	13 0 0
Flitch Plates	12 0 0	..	13 0 0

JOISTS, GIRDERS, &c. (*continued*).

	In London or delivered Railway Vans, per ton. £ s. d.		£ s. d.
Cast Iron Columns & Stanchions, including ordinary patterns	9 0 0	..	10 0 0

METALS.

	Per ton, in London. £ s. d.		£ s. d.
IRON—Common Bars	10 0 0	..	10 10 0
Staffordshire Crown Bars, good merchant quality	10 5 0	..	10 15 0
Staffordshire "Marked Bars"	12 0 0	..	—
Mild Steel Bars	10 0 0	..	11 0 0
Hoop Iron, basis price	11 0 0	..	—
„ „ Galvanised	19 0 0	..	—
(And upwards, according to size and gauge.)			
Sheet Iron Black—Ordinary sizes to 20 g.	11 10 0	..	—
„ „ 24 g.	12 10 0	..	—
„ „ 26 g.	14 0 0	..	—
Sheet Iron, Galvanised, flat, ordinary quality—Ordinary sizes, 6 ft. by 2 ft. to 3 ft. to 20 g.	16 10 0	..	—
Ordinary sizes to 22 g. and 24 g.	17 0 0	..	—
Ordinary sizes to 26 g.	18 0 0	..	—
Sheet Iron, Galvanised, flat, best quality—Ordinary sizes to 20 g.	19 0 0	..	—
„ „ 22 g. and 24 g.	19 10 0	..	—
Ordinary sizes to 26 g.	20 10 0	..	—
Galvanised Corrugated Sheets—Ordinary sizes, 6 ft. to 8 ft. 20 g.	15 10 0	..	—
Ordinary sizes, 22 g. and 24 g.	16 10 0	..	—
Ordinary sizes, 26 g.	17 10 0	..	—
Best Soft Steel Sheets, 6 ft. by 2 ft. to 3 ft. to 20 g. and thicker	13 10 0	..	—
Best Soft Steel Sheets, 22 g. & 24 g.	14 10 0	..	—
Best Soft Steel Sheets, 26 g.	16 10 0	..	—
Cut Nails, 3 in. to 6 in.	13 10 0	..	14 0 0
(Under 3 in., usual trade extras.)			

LEAD, &c.

	Delivered in London. £ s. d.		
LEAD—Sheet, English, 4 lb. and up	25 15 0	..	—
Pipe in coils	26 5 0	..	—
Soil pipe	29 5 0	..	—
Compo pipe	29 5 0	..	—

NOTE—Delivery in country in not less than 5 cwt. lots 1s. per cwt. extra.

	In casks of 10 cwt.		
ZINC—Sheet	72 0 0	..	

COPPER—Strong Sheet	per lb. 0 1 5	..	—
Thin „	„ 0 1 7	..	—
Copper nails	„ 0 1 5	..	—
Copper wire	„ 0 1 5	..	—
BRASS—Strong Sheet	„ 0 1 4	..	—
Thin	„ 0 1 5	..	—
TIN—English Ingots	„ 0 1 9	..	—
SOLDER—Plumbers'	„ 0 0 10	..	—
Tinmen's	„ 0 1 1	..	—
Blowpipe	„ 0 1 3	..	—

ENGLISH SHEET GLASS IN CRATES OF STOCK SIZES.*

Per Ft. Delivered.

15 oz. thirds	5½d.	26 oz. fourths	6d.
„ fourths	4½d.	32 oz. thirds	8d.
21 oz. thirds	6d.	„ fourths	7d.
„ fourths	5½d.	Fluted Sheet, 15 oz.	5½d.
26 oz. thirds	7d.	„ 21 oz.	6½d.

ENGLISH ROLLED PLATE IN CRATES OF STOCK SIZES.*

Per Ft. Delivered.

⅛ Rolled plate	3d.
⅛ Rough rolled and rough cast plate	3½d.
¼ Rough rolled and rough cast plate	4d.
Figured Rolled, Oxford Rolled, Oceanic, Arctic, Muffled, and Rolled Cathedral, white	5d.
Ditto, tinted	6d.

* Not less than two crates.

OILS, &c.

		£ s. d
Raw Linseed Oil in pipes	per gallon	0 3 1
„ „ „ in barrels	„	0 3 2
„ „ „ in drums	„	0 3 5
Boiled „ „ in barrels	„	0 3 4
„ „ „ in drums	„	0 3 7
Turpentine in barrels	„	0 3 2
„ in drums	„	0 3 5
Genuine Ground English White Lead, per ton (In not less than 5 cwt. casks.)		34 0 0
Red Lead, Dry	per ton	33 0 0
Best Linseed Oil Putty	per cwt.	0 10 0
Stockholm Tar	per barrel	1 12 0

VARNISHES, &c.

	Per gallon. £ s. d.
Fine Pale Oak Varnish	0 8 0
Pale Copal Oak	0 10 6
Superfine Pale Elastic Oak	0 12 6
Fine Extra Hard Church Oak	0 10 0
Superfine Hard-drying Oak, for seats of Churches	0 14 6
Fine Elastic Carriage	0 12 9
Superfine Pale Elastic Carriage	0 16 0
Fine Pale Maple	0 10 0
Finest Pale Durable Copal	0 18 6
Extra Pale French Oil	1 1 0
Eggshell Flating Varnish	0 18 0
White Pale Enamel	1 4 0
Extra Pale Paper	0 12 0
Best Japan Gold Size	0 10 0
Best Black Japan	0 16 0
Oak and Mahogany Stain	0 9 0
Brunswick Black	0 8 0
Berlin Black	0 16 0
Knotting	0 10 6
French and Brush Polish	0 10 0

[Owing to the exceptional circumstances which prevail at the present time, prices of materials should be confirmed by inquiry.]

TO CORRESPONDENTS.

NOTE.—All communications with respect to literary and artistic matters should be addressed to "THE EDITOR" (and not to any person by name); those relating to advertisements and other exclusively business matters should be addressed to THE BUILDER LTD., and *not* to the Editor.

All communications must be authenticated by the name and address of the sender, whether for publication or not. No notice can be taken of anonymous communications.

The responsibility of signed articles, letters, and papers read at meetings rests, of course, with the authors.

We cannot undertake to return rejected communications; and the Editor cannot be responsible for drawings, photographs, manuscripts, or other documents, or for models or samples sent to or left at this office, unless he has specially asked for them.

All drawings sent to or left at this office for consideration should bear the owner's name and address on either the face or back of the drawing. Delay and inconvenience may result from inattention to this.

Any commission to a contributor to write an article, or to execute or lend a drawing for publication, is given subject to the approval of the article or drawing, when received, by the Editor, who retains the right to reject it if unsatisfactory. The receipt by the author of a proof of an article in type does not necessarily imply its acceptance.

N.B.—Illustrations of the First Premiated Design in any important architectural competition will always be accepted for publication by the Editor, whether they have been formally asked for or not.

TENDERS.

Communications for insertion under this heading should be addressed to "The Editor," and must reach us *not later than 2 p.m. on Wednesday.* [N.B.—We cannot publish Tenders unless authenticated either by the architect or the building owner; and we cannot publish announcements of Tenders accepted unless the amount of the Tender is stated, nor any list in which the lowest Tender is under 100*l.* unless in some exceptional cases and for special reasons.]

* Denotes *accepted.* † Denotes *provisionally accepted.*

ACKWORTH (near Pontefract).—For piggeries at Poplar Farm. Messrs. Garside & Pennington, architects, Pontefract:—

L. Brooke & Co., Ltd., Brighouse, Yorks*... £115

BOLTON-UPON-DEARNE.—For ninety-nine dwelling-houses of three types and three dwelling-houses and shops in Furlong-road, Bolton-upon-Dearne, for the Urban District Council. Messrs. Garside & Pennington, architects, Ropergate, Pontefract. Quantities by the architects:—

Builder: H. Hirst, Birkenshaw*	£9,166	0
Joiners: Teanly & Son, Ltd., Sheffield*	5,3 6	17
Plumbers: E. Walker & Co., Heckmondwike*	3,469	0
Plasterers: Iredale & Son, Birstall*	1,059	0
Slater: W. P. Allison, Castleford*	1,220	0
Painters: R. Wheatley & Son, Pontefract*	408	0

[Accepted tenders subject to Local Government Board approval.]

BOLTON-UPON-DEARNE.—For 194 dwelling-houses of three types and five dwelling houses and shops on Barnsley-road, Goldthorpe, for the Bolton-upon-Dearne Urban District Council. Messrs. Garside & Pennington, architects, Ropergate, Pontefract. Quantities by the architects:—

Builders: Stubbings & Fell, Sutton-in-Ashfield*	£18,090	0
Joiners: Teanly & Son, Ltd., Sheffield*	10,605	13
Plumbers: E. Walker & Co., Heckmondwike*	6,289	0
Plasterers: Iredale & Son, Birstall*	2,084	0
Slaters: W. P. Allison, Castleford*	2,400	0
Painters: C. Wheatley & Son, Pontefract*	796	0

[Accepted tenders subject to Local Government Board approval.]

BOURNEMOUTH.—Construction of two groynes, for the Corporation:—

T. Wilkinson & Co.* £2,340

BOURNEMOUTH.—Erection of Westbourne Branch Library, for the Corporation:—

Barnes & Pond* £1,887

DUNFERMLINE.—Construction of new reservoir at Glendevon, and formation of access road, etc., for the Dunfermline District Committee:—

P. & W. Anderson, Glasgow* £97,000

GALWAY.—For erection of dispensary and medical officer's residence, for the Galway Board of Guardians. Mr. H. Macdonald, architect, St. Francis-street, Galway:—

Richardson & O'Connor, Mcgeullen‡	£850	0	0
J. Simon & P. Fahey	799	8	8

[‡ Recommended for acceptance subject to the sanction of the Local Government Board.]

LONDON.—For painting and repairs to the Union Offices at 15, Henrietta-street and 29, Maiden-lane, Covent Garden, W.C., for the Westminster Guardians:—

A. Hall & Co., 49, Derwent-grove, S.E.* ... £178

OYSTERMOUTH.—For new nave and chancel at All Saints' Church. Mr. L. W. Barnard, architect, 31, Promenade, Cheltenham:—

		Chancel Only.
E. Walters & Son	£14,742	£7,210
W. Cowlin & Sons	13,548	6,766
J. G. Morris	10,670	5,100
Lloyd Bros.	10,476	5,165
W. J. Bloxham	10,297	5,152
H. Pittard & Son	10,069	4,711
J. & F. Weaver	10,059	4,946
Bennett Bros	9,683	4,967
Franklin, Ltd.	9,250	4,700
Collins & Godfrey	8,976	4,549
J. Thompson & Co., Peterborough*	8,889	4,269
J. Long & Sons	8,888	4,629

PONTEFRACT.—For house in Carleton, for Mr. D. Santer. Messrs. Garside & Pennington, architects, Pontefract:—

W. Horner and other, Pontefract*... £484 8 9

READING.—Construction of convenience for women in St. Mary's Butts, for the Corporation:—

G. H. Tucker* £4 8 10

RISHWORTH.—For erection of eight artisan dwellings at Rishworth, for Messrs. J. W. Wheelwright & Son, Ltd. Messrs. Richard Horsfall & Son, architects, 22A, Commercial-street, Halifax. Quantities by the architects:—

Excavator and Mason: Helliwell & Shaw, Sowerby Bridge*	£1,060	0
Carpenter and Joiner: H. Whiteley, Richworth*	410	0
Plumber and Glazier: J. Stafford, Sowerby Bridge*	178	15
Plasterer and Slater: Whiteley & Berry, Sowerby Bridge*	170	0

SOUTH KIRBY (near Wakefield).—For the erection of twenty-two dwelling-houses. Messrs. Garside & Pennington, architects, Pontefract:—

L. Brooke & Co., Ltd., Brighouse, Yorks* £4,774

SOUTH KIRBY (near Wakefield).—For street work. Messrs. Garside & Pennington. architects, Pontefract:—

L. Brooke & Co., Ltd., Brighouse, Yorks*... £757

THORNBURY.—Widening of road at Bay-lane, for the Thornbury Rural District Council:—

T. Price	£291	11	8
G. Dimmery & Shark	175	0	0
Sons, Pitbrook*	£93	12	0

WICKFORD.—Erection of bridge over River Crouch at Wickford, for the Essex County Council:—

W. & C. French* £1,316 9 4

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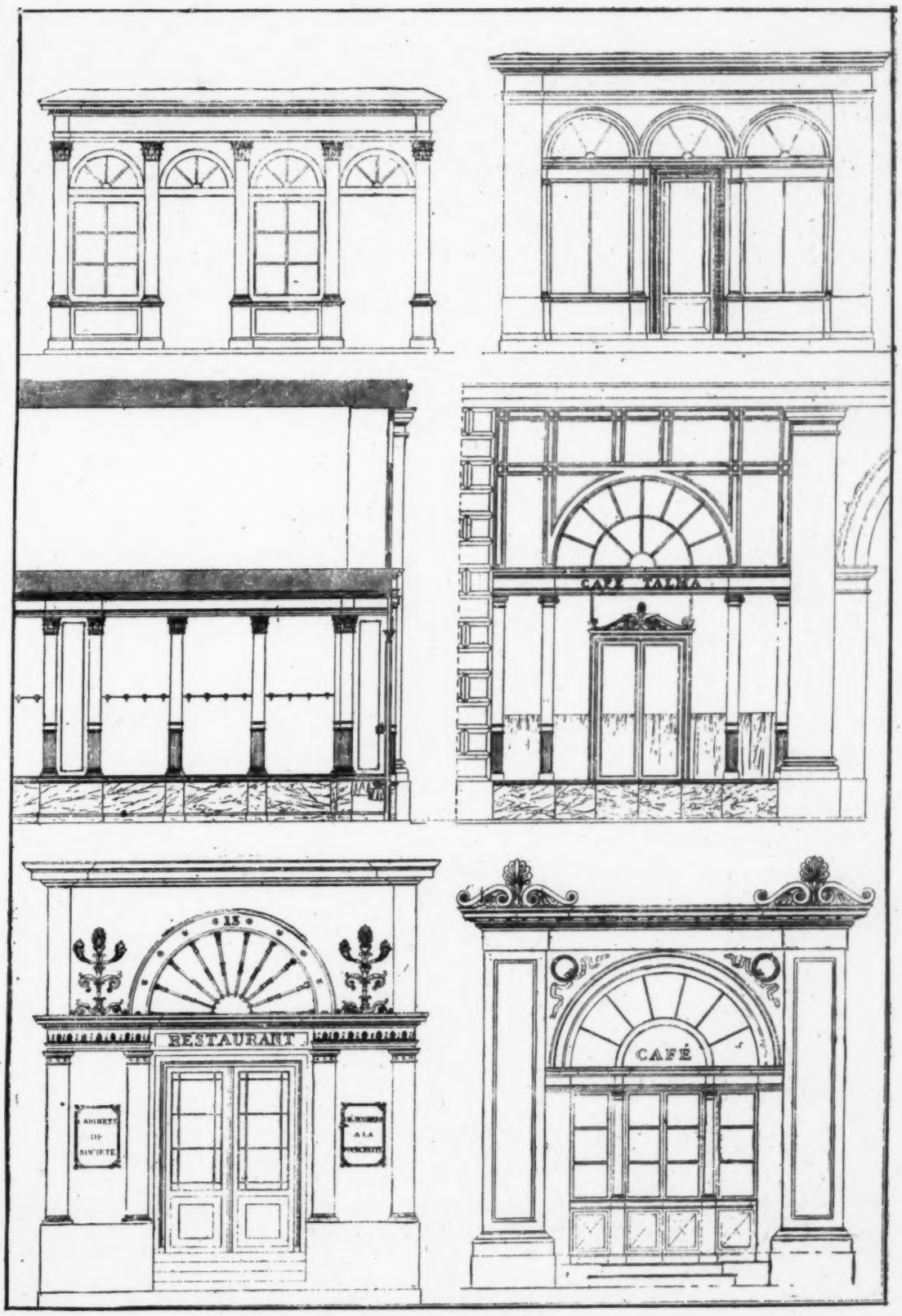
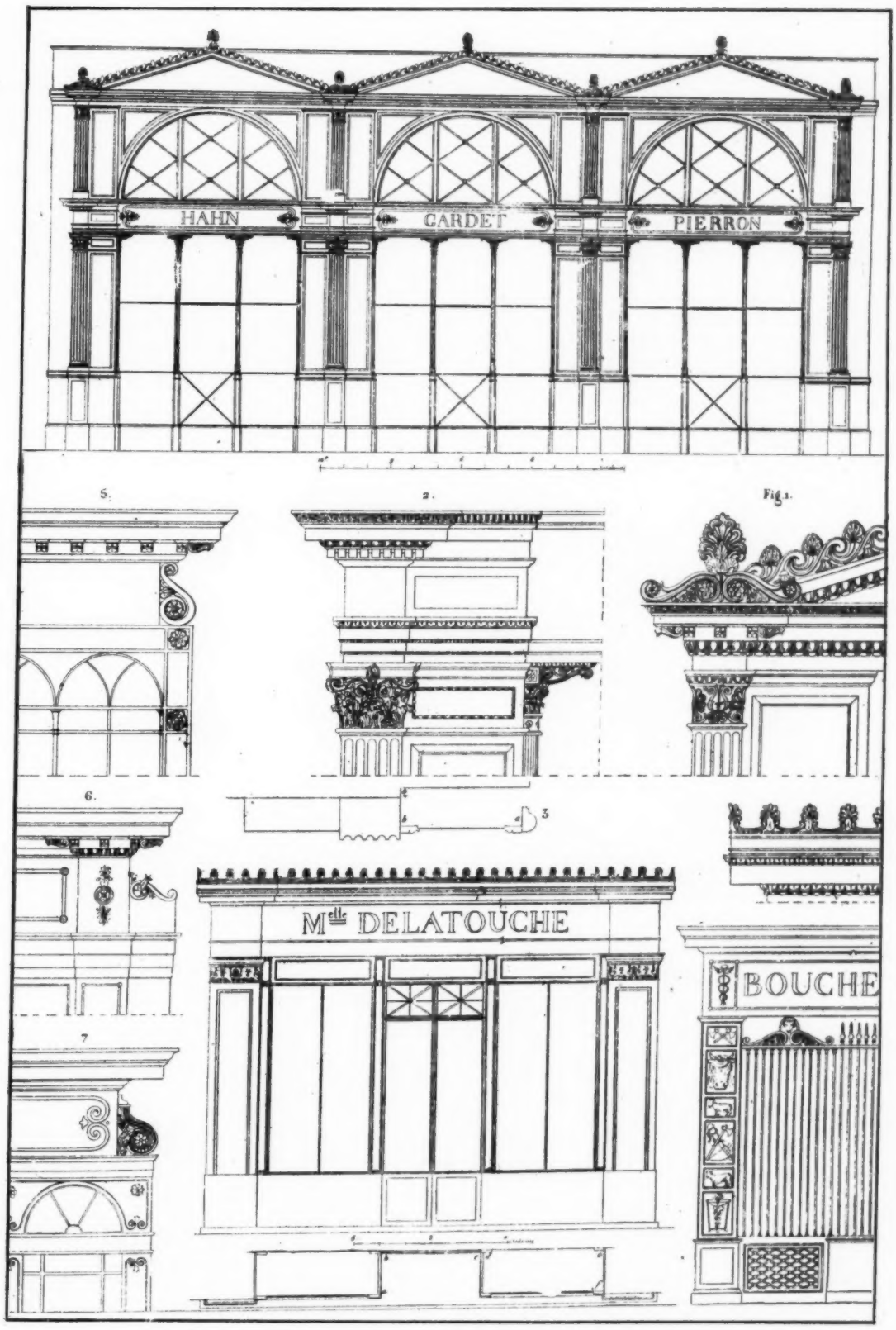


TYPICAL FRENCH SHOP FRONTS.

From Thiollet's "Principes et Études d'Architecture.")



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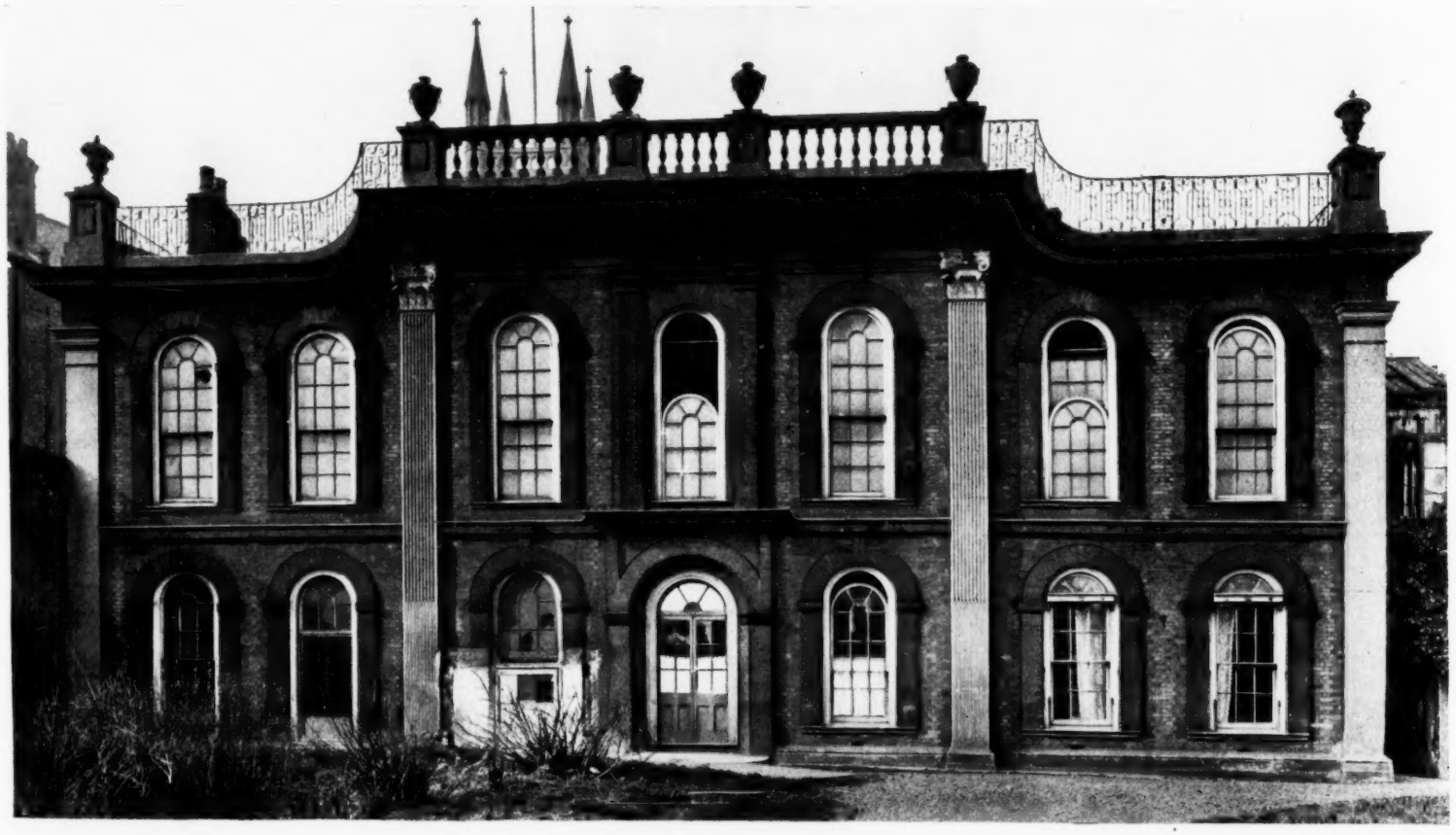
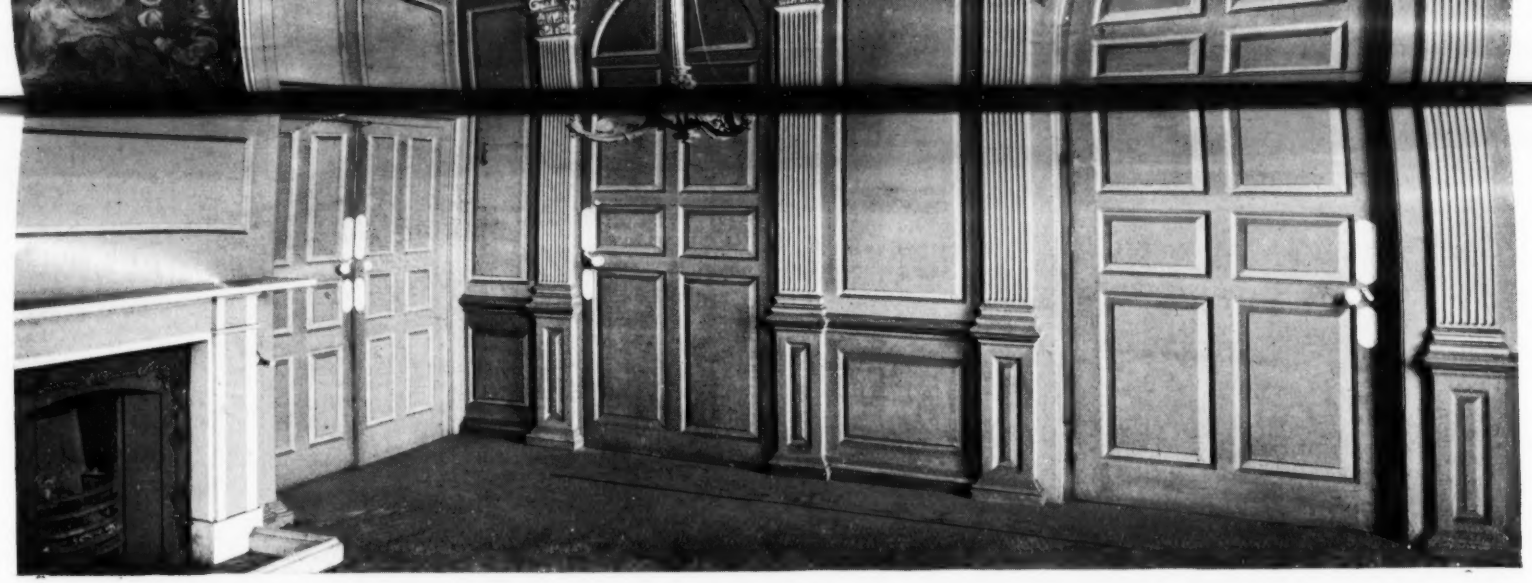


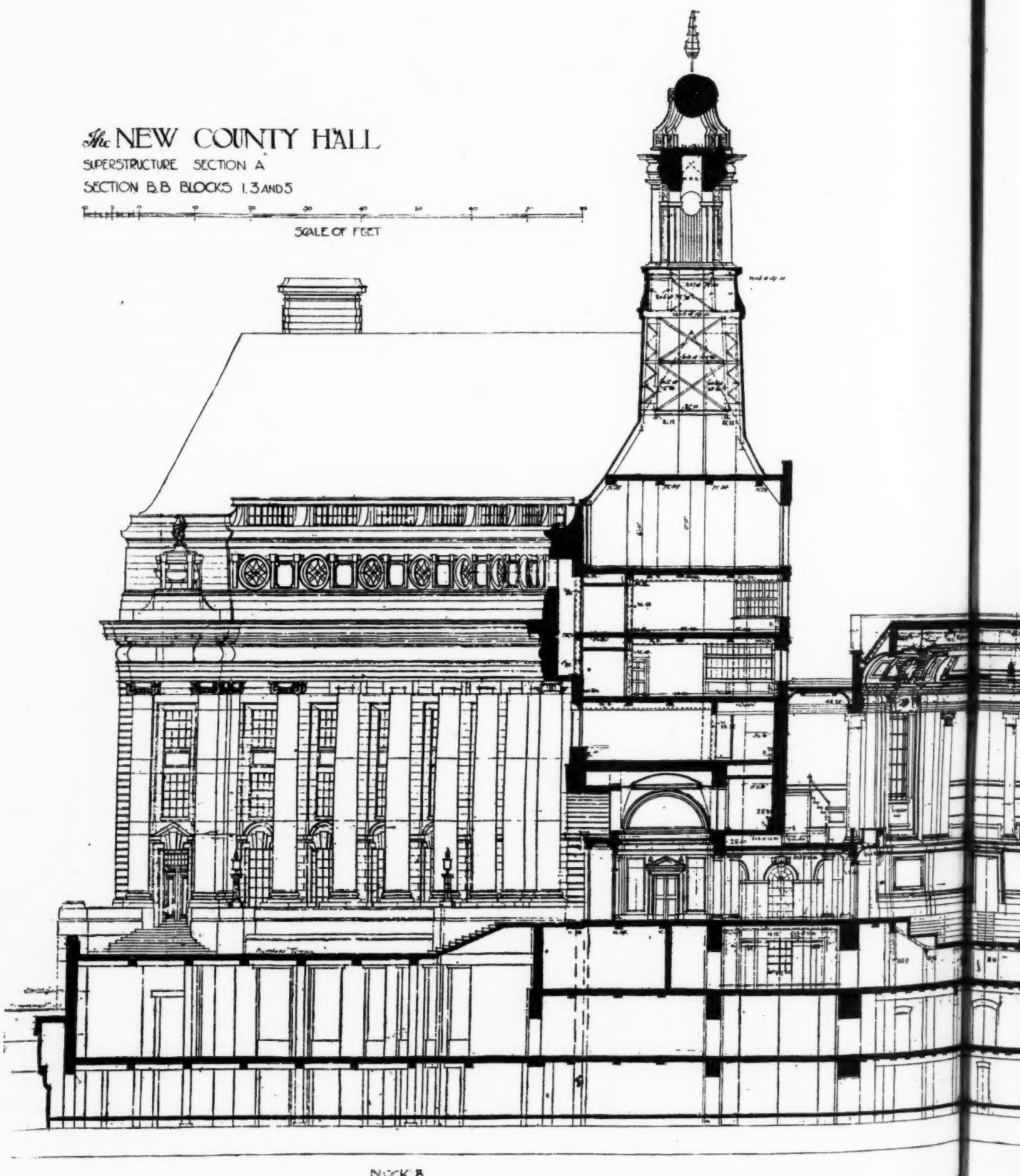
FRONT BEFORE RECONSTRUCTION.



An Interior View.

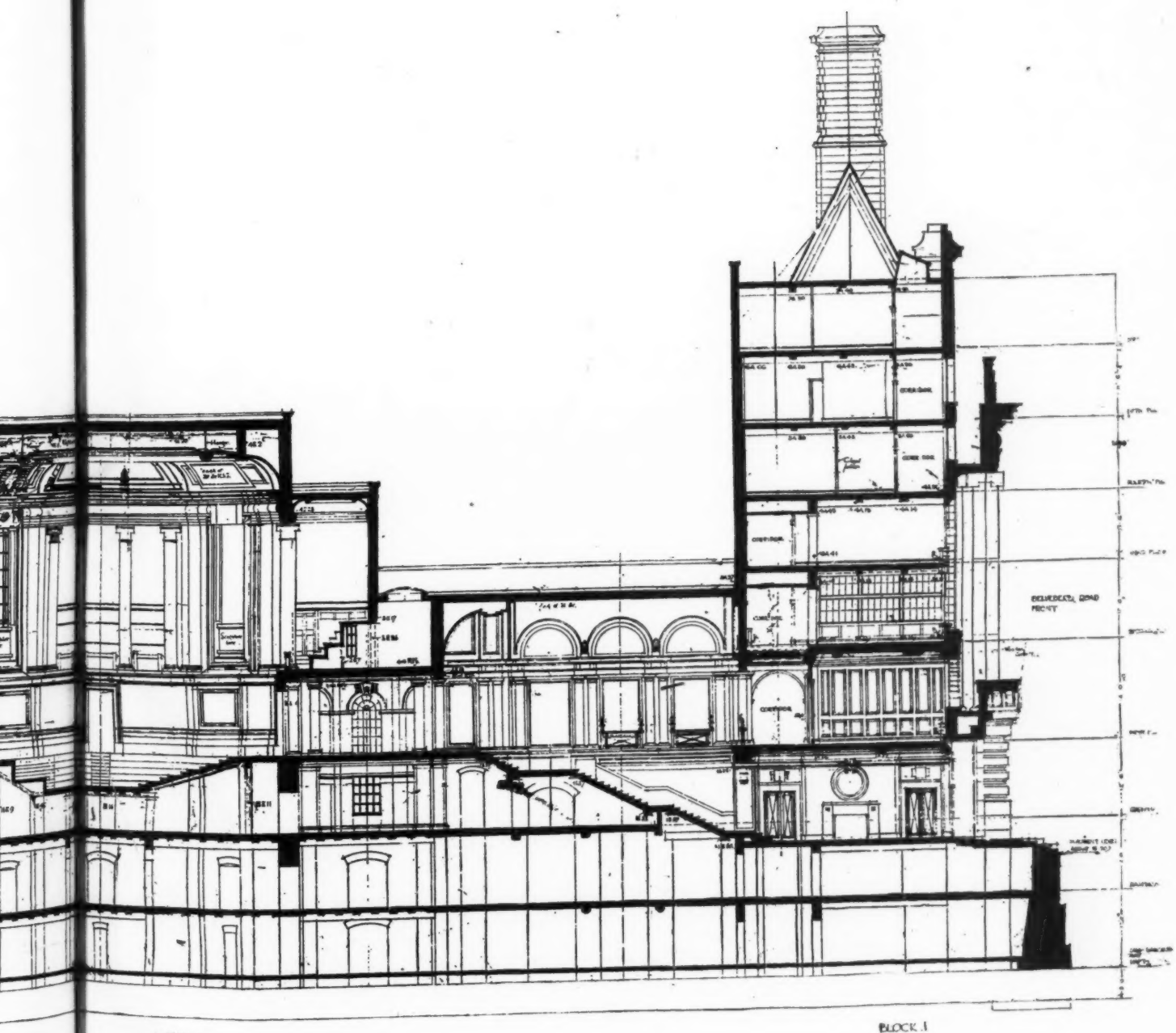
Front after Reconstruction.

BRADMORE HOUSE, HAMMERSMITH: NOW USED AS A GARAGE FOR THE GENERAL OMNIBUS COMPANY.



PLAN OF SECTION OF CENTRE PORTION OF THE NEW COUNTY [illegible]LL SHO

MR. W. E. RILEY, THE [illegible]CIL'S OFF



COUNTY LL SHOWING COUNCIL CHAMBER.—Mr. Ralph Knott, Selected Architect.

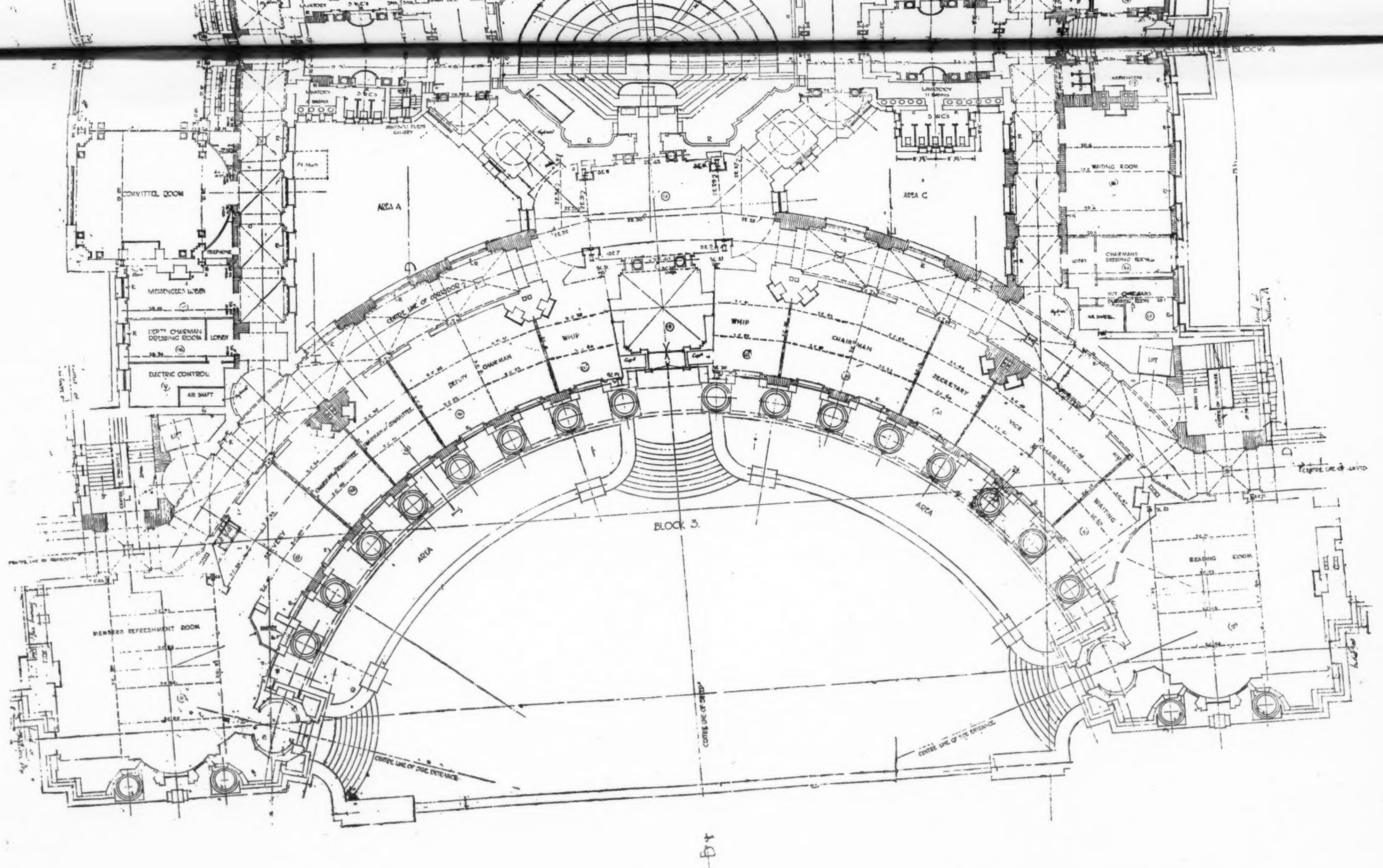
Riley, the CIL'S Official Architect.

The NEW COUNTY HALL

SUPERSTRUCTRE FIRST FLOOR PLAN, SECTION A

SCALE 16 FEET

NOTE.
BLUE BRICKWORK SHOWN THUS
SEE ALSO STEELWORK KEY PLANS Nos 6904, 6904, 6920, 6921 AND 6915



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Mr. W. E. Riley, the Council's Official Architect.